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BELL & HOWELL

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CONTENTS

Page

Patent Notices

- Certificates of Correction for the Week of November 7, 1972 2
- Patents Available for Licensing or Sale 2

Condition of Patent Applications 4

Defensive Publications 5

Patents Granted

- General and Mechanical 10
- Chemical 67
- Electrical 94

Design Patents Granted 124

Index of Patentees . . . . PI 1

Indices of Applicants of Defensive Publications and Designs . . . . PI 17

Classification of

- Patents . . . . PI 19
- Designs and Defensive Publications . . . . PI 20

Geographical Index of Residence of Inventors

- Patents . . . . PI 21
- Designs and Applicants of Defensive Publications . . . . PI 22

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PATENT OFFICE NOTICES

Certificates of Correction for the Week of Nov. 7, 1972

P.P. 3,136
D. 214,555
D. 217,347
D. 221,161
D. 221,905
D. 223,272
D. 223,382
3,460,652
3,500,162
3,538,294
3,542,361
3,550,879
3,560,479
3,568,174
3,572,958
3,574,704
3,578,367
3,580,914
3,586,764
3,587,111
3,587,653
3,588,933
3,591,562
3,593,982
3,594,934
3,595,997
3,598,833
3,601,510
3,605,192
3,605,862
3,607,143
3,609,128
3,613,077
3,614,161
3,615,721
3,615,902
3,620,770
3,621,587
3,622,316
3,623,517
3,623,905
3,625,802
3,626,015
3,627,021
3,627,329
3,628,059
3,629,038
3,629,971
3,630,680
3,631,607
3,631,916
3,633,276
3,633,385
3,634,147
3,634,204
3,634,355
3,634,400
3,634,898
3,635,082
3,635,448
3,635,612
3,637,053
3,637,253
3,637,303
3,637,476
3,638,398
3,640,137
3,640,391
3,640,737
3,641,023
3,641,084
3,641,327
3,641,401
3,641,410
3,641,591
3,642,619
3,642,865
3,642,921
3,643,085
3,643,239
3,643,874
3,644,203
3,644,623
3,644,674
3,645,458
3,646,321
3,646,340
3,646,807
3,646,830
3,647,793
3,647,794
3,648,107
3,648,251
3,648,638
3,649,095
3,649,144
3,649,206
3,649,232
3,649,408
3,649,561
3,649,569
3,649,597
3,649,933
3,650,349
3,650,841
3,650,965
3,650,991
3,651,085
3,651,341
3,651,692
3,651,855
3,651,862
3,651,980
3,651,999
3,652,217
3,652,498
3,652,764
3,653,468
3,653,595
3,653,761
3,653,798
3,653,824
3,654,020
3,654,280
3,654,476
3,654,497
3,655,063
3,655,243
3,655,440
3,655,491
3,656,109
3,656,761
3,657,175
3,657,256
3,657,511
3,658,851
3,659,586
3,659,968
3,660,040
3,660,121
3,660,769
3,660,893
3,661,049
3,661,460
3,661,751
3,661,960
3,662,007
3,662,039
3,662,530
3,663,073
3,663,091
3,663,165
3,663,261
3,665,364
3,665,912
3,666,236
3,666,277
3,667,297
3,667,613
3,668,003
3,668,245
3,668,345
3,669,567
3,670,159
3,670,528
3,670,549
3,672,009
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3,674,991

Patents Available for Licensing or Sale

3,570,469. BARBECUE GRILL WITH DISPOSABLE TOP. Denton H. Jones, 3504 S. 100th Ave., Omaha, Nebr., 68124.

3,570,507. FISHING TENT. Morris Kashuba, 1563 Main St., Peckville, Pa., 18452.
3,591,925. LINE ANGLE DEGREE LEVEL INSTRUMENT. Frank Dupin, Box 109, Gurnee, Ill., 60031.

3,602,389. CONTAINER OPENER AND HANDLE ASSEMBLY. David E. Russell, 110 Riverside Axe., Jacksonville, Fla., 32202.

3,633,697. VEHICLE SAFETY DEVICE. Harry Silver, 4810 N. Los Altos Place, Tucson, Ariz., 85704.

3,656,637. INVALID CAR LIFT. Dwane P. Simmons, 7465 Olive Tree Lane, Highland, Calif., 92346.

3,663,580. HALOGEN-CARBONYLOXYL COMPOUNDS OF THE STEROID SERIES. VEB Jenapharm Jena, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y. 10017.

3,669,434. APPARATUS FOR MELTING PARTICULATE METAL. Kloeckner-Werke AG, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,680,226. DRAFTING AID. K. Havel, P.O. Box 66, Station "M," Toronto 21, Ontario, Canada.

3,683,924. TONGUE SCRAPER. Lawrence D. Louis, 1612 McKinley Road., Napa, Calif., 94558.

3,684,344. DECORATIVE SPACE-SAVING VANITY. Jean A. Gilinger, 6703 Oaklawn Way, Fair Oaks, Calif., 95628.

3,691,557. SYSTEM FOR IDENTIFYING OBJECTS USING AN ENCODING ARRAY FOR EACH OBJECT. James Constant, 1603 Danbury Drive, Claremont, Calif., 91711.

3,691,755. CLOCK WITH DIGITAL DISPLAY. Pierre Girard. Correspondence to: Stevens, Davis, Miller & Mosher, 1911 Jefferson Davis Highway, Suite 600, Crystall Mall 1, Arlington, Va., 22202.

The following 2 patents are offered by: Robert E. Hall, Arlington, Va. Correspondence to Mrs. A. H. Cravens, 1619 N. Highland St., Arlington, Va., 22201.

2,730,207. COLLAPSIBLE AND HOIST.
2,740,626. AUTOMATIC WINDOW CONTROL.

The White Lily Foods Company is prepared to grant non-exclusive licenses under the following patent.

Inquiries respecting licenses should be addressed to: The White Lily Foods Company, 218 Depot Ave. NE., Knoxville, Tenn., 37901.

3,671,264. PACKAGED MIXES FOR FLAVORED FOOD PRODUCTS AND THE PROCESS OF MAKING THEM.

The General Tire & Rubber Company is prepared to grant non-exclusive licenses at reasonable royalty rates under the following patent.

Inquiries respecting licenses should be addressed to: General Tire & Rubber Company, 1 General St., Akron, Ohio, 44309.

3,574,149. FLAME RETARDANT FLEXIBLE POLYURETHANE FOAMS.

The Department of Health, Education and Welfare is prepared to grant licenses as provided by Title 45 C.F.R. Section 6.3, under the following patents.

Inquiries should be addressed to: Mr. Norman J. Latker, Chief, Patents Branch, ℅ National Institutes of Health, Room 5A03, Westwood Bldg., Bethesda, Md., 20014.

3,677,092. VOLUME METERING APPARATUS FOR CIRCULATORY ASSIST PUMPS.
3,623,960. GLUCOSE DETERMINATION METHOD.
3,678,233. STANDARDIZED SET OF COMPENSATING FILTERS FOR MANTLE-FIELD RADIATION THERAPY.
3,774,818. SYNTHESIS OF A MATERIAL WITH JUVENILE HORMONE ACTIVITY.
3,616,935. PREPARATION OF ANTITHROMBOGENIC SURFACES.
3,692,493. LYMPHOCYTE TRANSPORT BAG.

RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following patents.

Inquiries respecting licenses should be addressed to: RCA Corporation, Staff Vice President, Domestic Licensing, 1133 Avenue of the Americas, New York, N.Y., 10036.

Re. 27,454. INTEGRATED CIRCUIT BIASING ARRANGEMENTS.
3,680,236. ELECTRON TUBE HAVING TAMPER-DETECTABLE LABEL ATTACHED THERETO.
3,681,071. METHOD OF PRESSURE TREATING ELECTROPHOTOGRAPHIC RECORDING ELEMENTS TO CHANGE THEIR SENSITIVITY TO LIGHT.
3,681,110. METHOD OF PRODUCING A LUMINESCENT-SCREEN STRUCTURE INCLUDING LIGHT-EMITTING AND LIGHT-ABSORBING AREAS.
3,681,693. MEASUREMENT OF MAXIMUM DYNAMIC SKEW IN PARALLEL CHANNELS.
3,681,703. LOW LEVEL DC AMPLIFIER WITH AUTOMATIC ZERO OFFSET ADJUSTMENT.
3,681,713. HIGH Q CIRCUITS ON CERAMIC SUBSTRATES.
3,682,784. PROCESS FOR FORMING A CONDUCTIVE DATING ON A SUBSTRATE.
3,682,785. PROCESS FOR FORMING AN ISOLATED CIRCUIT PATTERN ON A CONDUCTIVE SUBSTRATE.
3,683,193. BUCKET BRIGADE SCANNING OF SENSOR ARRAY.
3,683,211. FERRO-ELECTRIC TRANSFORMERS WITH MEANS TO SUPRESS OR LIMIT RESONANT VIBRATIONS.
3,683,240. ELECTROLUMINESCENT SEMICONDUCTOR DEVICE OF GAN.
3,683,254, SERVO SYSTEM WITH NOISE CANCELLATION.
3,683,295. GAS LASER DISCHARGE TUBE.

3,683,298. MICROWAVE APPARATUS USING MULTIPLE AVALANCHE DIODES OPERATING IN THE ANOMALOUS MODE.
3,683,391. ANTENNA SYSTEM FOR TELEVISION RECEPTION WITHIN BOTH THE UHF AND VHF TELEVISION BAND OF FREQUENCIES.
3,684,727. DOPED CALCIUM FLUORIDE AND STRONTIUM FLUORIDE PHOTOCHROMIC COMPOSITIONS.
3,684,825. CONTRAST COMPRESSION CIRCUITS.
3,684,826. SYSTEM FOR RECORD MEDIUM CONTROL AND EDITING.
3,684,899. CAPACITIVE STEERING NETWORKS.
3,684,920. TRANSISTORIZED VERTICAL DEFLECTION CIRCUIT.
3,685,137. METHOD FOR MANUFACTURING WIRE BONDED INTEGRATED CIRCUIT DEVICES.
3,685,857. BOOKBINDING.
3,685,994. PHOTOGRAPHIC METHOD FOR PRINTING A SCREEN STRUCTURE FOR A CATHODE-RAY TUBE.
3,686,080. METHOD OF FABRICATION OF SEMICONDUCTOR DEVICES.
3,686,516. HIGH VOLTAGE PULSE GENERATOR.
3,686,539. GALLIUM ARSENIDE SEMICONDUCTOR DEVICE WITH IMPROVED OHMIC ELECTRODE.
3,686,543. ANGLED ARRAY SEMICONDUCTOR LIGHT SOURCES.
3,686,578. STABILIZED TRANSFERRED ELECTRON AMPLIFIER.
3,686,590. SHEET METAL WAVEGUIDE CONSTRUCTED OF A PAIR OF INTERLOCKING SHEET METAL CHANNELS.
3,686,624. COAX LINE TO STRIP LINE END LAUNCHER.
3,687,722. METHOD OF COATING SELECTIVE AREAS OF THE SURFACE OF A BODY.
3,688,025. RECORDER AND PLAYBACK APPARATUS FOR PULSE WIDTH MODULATED RECORD.
3,688,031. HORIZONTAL OSCILLATOR DISABLING.
3,688,037. SYNCHRONIZING SYSTEM.
3,688,131. TIME DELAY DEVICE.
3,688,153. DEFLECTION CIRCUIT.
3,688,154. A STABLE MULTIVIBRATOR CIRCUIT WITH MEANS FOR ENSURING PROPER STARTING OF OSCILLATIONS.
3,688,198. VHF AND UHF AUTOMATIC GAIN CONTROL CIRCUITRY DERIVED FROM A SINGLE CONTROL VOLTAGE.
3,688,207. HIGH SPEED TUNABLE MASER FOR USE IN RADAR AND COMMUNICATION RECEIVERS.
3,688,264. OPERATION OF FIELD-EFFECT TRANSISTOR CIRCUITS HAVING SUBSTANTIAL DISTRIBUTED CAPACITANCE.

The General Electric Company is prepared to grant non-exclusive licenses under the following 33 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patent may be addressed to: Division Patent Counsel, Space Division, Housewares Business Division, 1285 Boston Ave., Bridgeport, Conn., 06602.

3,577,859. COMBINATION FLATIRON AND INTEGRAL CREASER.

Applications for license under the following patent may be addressed to: Patent Counsel, Mobile Radio Department, General Electric Co., Lynchburg, Va., 24502.

3,676,750. DATA INPUT DEVICE WITH HAND HELD SELECTIVE CIRCUIT CLOSING MEANS

Applications for licenses under the following patent may be addressed to: Division Patent Counsel, Space Division, General Electric Co., P.O. Box 8555, Philadelphia, Pa., 19101.

3,689,884. DIGITAL CORRELATOR FOR CALCULATING FIGURE OF MERIT OF COMMUNICATION TRANSMISSION SYSTEM.

Applications for license under the following 2 patents may be addressed to: Division Patent Counsel, AC Motor & Generator Business Division, General Electric Co., 1 River Road, Bldg. 41, Rm. 106, Schenectady, N.Y., 12345.

3,436,633. REGULATOR SENSING CIRCUIT FOR ALTERNATING CURRENT GENERATOR.
3,611,085. PREVENTING TORQUE PULSATION IN INVERTER-FED POLYPHASE MOTORS.

Applications for license under the following 10 patents may be addressed to: Francis K. Richwine, Patent Counsel, Ordnance Systems Department, General Electric Co., 100 Plastics Ave., Pittsfield, Mass., 01201.

2,774,102. BEAD SETTING METHOD AND APPARATUS.
2,956,435. CONDENSATION NUCLEI DETECTOR.
2,960,869. ARC COMPARATOR.
3,117,841. METHOD AND APPARATUS FOR DETECTING GASES OR VAPORS.
3,489,207. VAPOR-COOLED ELECTRONICS ENCLOSURES.
3,551,747. PULSE WIDTH MODULATED BRIDGE POWER AMPLIFIER PROTECTION CIRCUIT.
3,560,829. PULSE WIDTH MODULATED BRIDGE POWER AMPLIFIER WITH MEMORY AND LOCK-OUT LOGIC.
3,607,805. METHOD AND APPARATUS FOR DETECTING GASES OR VAPORS.

Applications for licenses under the following 18 patents may be addressed to: Patent Counsel, Major Appliance Business Group, General Electric Co., Appliance Park, Louisville, Ky., 40225.

2,858,687. CONTROL CIRCUITS FOR AUTOMATIC CLOTHES WASHING MACHINES.
2,983,130. CLOTHES WASHING MACHINE HAVING DRAIN PUMP SYSTEM.
3,480,124. ELECTROMAGNETIC CLUTCH.
3,481,162. WASHING MACHINE.
3,481,163. DISPENSING ARRANGEMENT FOR WASHING MACHINE.
3,481,164. WASHING MACHINE.
3,483,719. CONTROL FOR ELECTROMAGNETIC CLUTCH.
3,506,101. CLUTCH COOLING STRUCTURE.
3,509,394. ELECTROMAGNETIC CLUTCH CONTROL.
3,509,741. LABYRINTH SEAL TUB COVER.
3,513,880. DUAL STAGE VALVE.
3,659,579. COMBINATION BAKING AND BROILING GAS OVEN.
3,659,646. HEAT EXCHANGER CONSTRUCTION.
3,674,359. REFRIGERATOR CABINET WITH REMOVABLE PARTITION.
3,678,698. SIDE-BY-SIDE REFRIGERATOR INCLUDING LOW-COST EVAPORATOR MEANS.
3,678,701. ICE MAKER.
3,679,855. PROTECTIVE BARRIERS FOR WINDOW OF MICROWAVE OVEN DOOR.
3,680,825. FIXTURE FOR USE IN THE FOAM INSULATION OF REFRIGERATOR CABINETS.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF OCTOBER 17, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries. Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	8-19-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons: Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-02-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-09-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-09-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—Director (Vacant) Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	5-04-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	2-23-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	8-11-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-01-71
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—Director (Vacant) Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-16-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-26-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director Industrial Arts: Household, Personal and Fine Arts.	3 18-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-01-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	8-02-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	9-23-71
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	11-01-71
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	8-19-71

Expiration of patents: The patents within the range of numbers indicated below expire during November 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,721,999 to 2,725,557, inclusive
Plant Patents	Numbers 1,427 to 1,435, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED NOVEMBER 7, 1972

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T904,001

PROCESS FOR THE DISPERSION POLYMERIZATION OF A VINYLIDENE CHLORIDE COPOLYMER

Vernon Charles Haskell, Sleepy Hollow Estates, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Original application July 12, 1967, Ser. No. 652,684. Divided and this application Feb. 27, 1970, Ser. No. 18,391

Int. Cl. C08f *45/28, 15/40*
U.S. Cl. 260—33.6 UA

No Drawing. 15 Pages Specification

A process for preparing a copolymer of vinylidene chloride characterized by spherical particles having an average diameter between about 1 micron and about 5 microns which comprises polymerizing between about 70% and about 85% by weight of vinylidene chloride, between about 10% and about 25% by weight of a monomer selected from the group consisting of methyl acrylate, methyl methacrylate and acrylonitrile, between about 3% and about 6% by weight of an unsaturated monocarboxylic acid selected from the group consisting of acrylic and methacrylic acids, in the presence of from 0.3% to 1.5% by weight, based upon the total weight of said monomers, of a free radical initiator and at a temperature between about 45° C. and about 65° C., in an aliphatic hydrocarbon solvent containing between about 5% and 15%, based upon the total weight of said monomers, of a polymeric dispersing agent comprising a copolymer of an alkyl ester of acrylic acid wherein the alkyl group contains between 4 and 8 carbon atoms with from 0.1% to 2%, by weight of the monomers, of a polymerizable monomer selected from the group consisting of allyl acrylate and allyl methacrylate. Alternatively, the polymerization monomers additionally include about 1% to 3% by weight, based upon the total weight of said monomers, of a cross-linking agent selected from the group consisting of allyl acrylate, allyl methacrylate, ethylene dimethacrylate, glycidyl methacrylate and glycidyl acrylate.

The vinylidene chloride copolymer characterized by the spherical particles can be coated onto a film base such as regenerated cellulose to improve the slip properties of the film base. The coating comprises (a) a first copolymer of vinylidene chloride and at least one other ethylenically unsaturated monomer and (b) a second copolymer of vinylidene chloride and at least one other ethylenically unsaturated monomer characterized by spherical particles in the amount of about 0.01 to 1.5 weight percent based on the weight of the first copolymer. These coated films are particularly useful in packaging foods.

T904,002

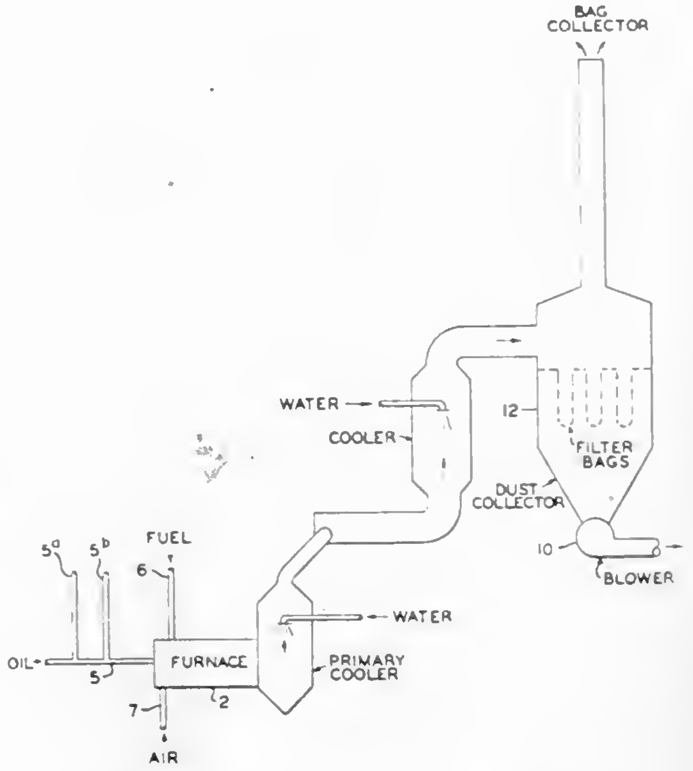
PRODUCTION OF CARBON BLACK FROM DISTILLATE OF RUBBER

Joseph R. Laman and Joseph A. Beckman, Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation of abandoned application Ser. No. 826,303, May 8, 1969. This application July 29, 1971, Ser. No. 167,445

Int. Cl. C09c *1/50*
U.S. Cl. 423—450

1 Sheet Drawing. 9 Pages Specification

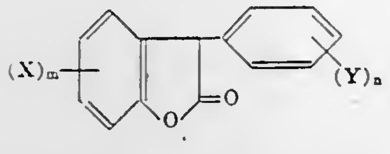


Carbon black is produced from liquid distillate obtained from the distillation of rubber. The distillation may be effected by heating the rubber externally in a suitable retort or the like, or by internal combustion of a part of the rubber with air to produce the necessary heat, limiting the air supply to minimize the conversion of the oil to gases. The distillate may be mixed with other oil before conversion to carbon black in a carbon black furnace. The furnace is heated to the desired temperature by burning either a portion of the distillate and/or fuel gas supplied to the furnace. The carbon black product can be used as semi-reinforcing black and as a filler in rubber products.

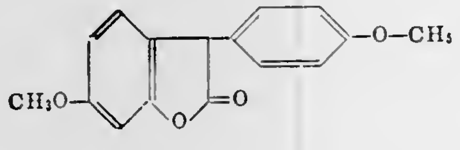
This application is a continuation of application Ser. No. 826,303, filed May 8, 1969, now abandoned.

T904,003
COMPETING COUPLERS
Ilmari F. Salminen, Rochester, N.Y. 14626
Filed Nov. 19, 1971, Ser. No. 190,463
Int. Cl. G03c *7/00, 1/40*
U.S. Cl. 96—56.4
No Drawing. 29 Pages Specification

A class of coumaran-2-one compounds of the formula



wherein X and Y are individually defined as an alkyl group or an alkoxy group; n is an integer of 1–5; and m is an integer of 0–3; wherein at least one of the Y substituents is substituted in para position on the phenyl ring and wherein X can be defined as both an alkyl group and an alkoxy group on the same ring when m is greater than 1, and Y can be defined as both an alkyl group and an alkoxy group on the same ring when n is greater than 1. The above-defined compounds have utility as diffusible or non-diffusible competing couplers in the color photographic art as components of a color developer solution, a photographic silver halide emulsion, or corresponding color photographic element. A competing coupler within this class is the compound



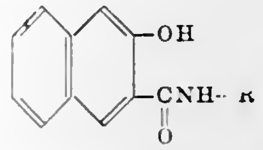
T904,004
RUMINANT DIRECT FEEDING SUSPENSION SUPPLEMENT
Frank P. Achorn, 2315 Sherrod Ave., and Frank Anderson, Jr., 517 W. Lelia St., both of Florence, Ala. 35630
Filed Oct. 22, 1971, Ser. No. 191,853
Int. Cl. A23k *1/22, 1/175*
U.S. Cl. 99—2 ND
No Drawing. 26 Pages Specification

A direct molasses-containing feeding supplement designed to cure or prevent in ruminants low blood serum magnesium and/or calcium levels, which low levels lead to the ailment, grass tetany. In order to incorporate sufficient magnesium as an oxide to do the job, the solubility limit is exceeded in the aqueous system resulting in a suspension supplement. Previously, such suspensions would gel in short order and become useless. It has now been discovered that gelling can be prevented for substantial periods of time if the ammonium polyphosphate solution component of the suspension contains greater than about 70 percent polyphosphate species therein expressed as P_2O_5 including substantial amounts of tripoly.

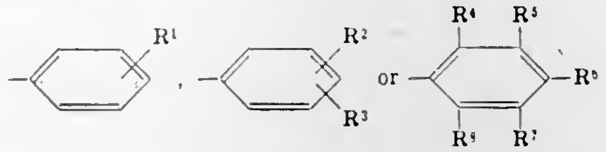
Perhaps the most significant feature of our invention is to suspend with the use of clay the maximum amount of magnesium oxide (as well as calcium oxides or calcium carbonates and/or sulfur as elemental sulfur or ammonium sulfate) in our direct feeding supplement suspension. Inasmuch as the maximum permissible daily uptake by the individual ruminant of the feed supplement is determined to a great extent by the toxicity level of the nonprotein nitrogen therein (i.e., that supplied by the ammonia utilized in ammoniating said phosphoric acid), it is of utmost importance that such amounts of supplement carry to the ruminant at least the minimum daily requirement of Mg.

T904,005
DIAZOTYPE COMPOSITION AND ELEMENT
James C. Fleming, Rochester, N.Y. 14617
Filed Nov. 3, 1971, Ser. No. 195,467
Int. Cl. G03c *1/58*
U.S. Cl. 96—91 R
No Drawing. 22 Pages Specification

Diazotype compositions including a light-sensitive diazonium salt and a coupler compound that can react with the diazonium salt to form an azo dye, wherein the coupler is a 3-hydroxy-2-naphthanilide having the formula



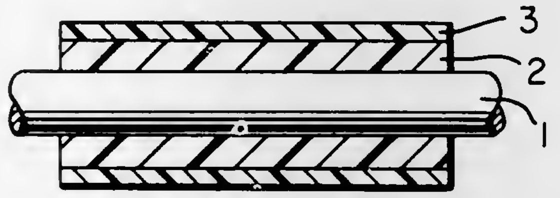
wherein R represents an aryl radical having a formula that is either



wherein R^1 represents a cyanomethyl group, a cyano group, a nitro group or an alkylsulfonyl group; R^2 represents a trihalomethyl group, a halogen atom or a nitro group; R^3 represents a halogen atom and each of R^4, R^5, R^6, R^7 and R^8 is the same and is a halogen atom, preferably fluoro, produce azo dyes of increased red light opacity on development. Particularly desirable such couplers include

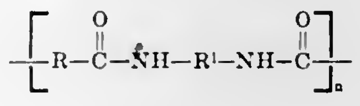
4′-cyanomethyl-3-hydroxy-2-naphthanilide,
4′-chloro-3-hydroxy-3′-trifluoromethyl-2-naphthanilide,
2′,3′,4′,5′,6′-pentafluoro-3-hydroxy-2-naphthanilide,
3′-cyano-3-hydroxy-2-naphthanilide,
3′,4′-dichloro-3-hydroxy-2-naphthanilide,
3-hydroxy-4′-hydroxyethylsulfonyl-2-naphthanilide,
3-hydroxy-3′-nitro-2-naphthanilide,
4′-cyano-3-hydroxy-2-naphthanilide,
4′-chloro-3-hydroxy-3′-nitro-2-naphthanilide, or
3-hydroxy-4′-n-hexadecylsulfonyl-2-naphthanilide.

T904,006
METAL CONDUCTOR HAVING ALTERNATE LAYERS OF AN AROMATIC POLYAMIDE ENAMEL AND AN ACRYLIC WIRE ENAMEL
George P. Mell, Newtown Square, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del. Continuation of abandoned application Ser. No. 883,510, Dec. 9, 1969. This application Nov. 19, 1971, Ser. No. 200,571
Int. Cl. H01b *3/44;* **B44d** *1/18*
U.S. Cl. 117—218
1 Sheet Drawing. 28 Pages Specification



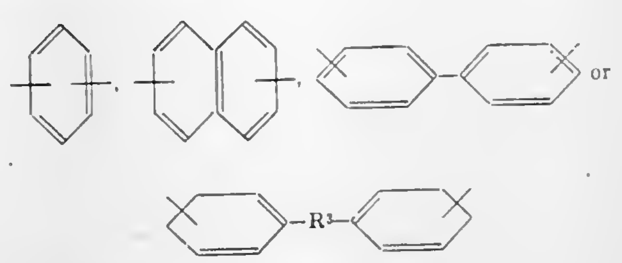
A metal conductor coated with multiple layers of an aromatic polyamide and an acrylic polymer is the subject of this invention wherein

(A) the aromatic polyamide has the following recurring structural unit:

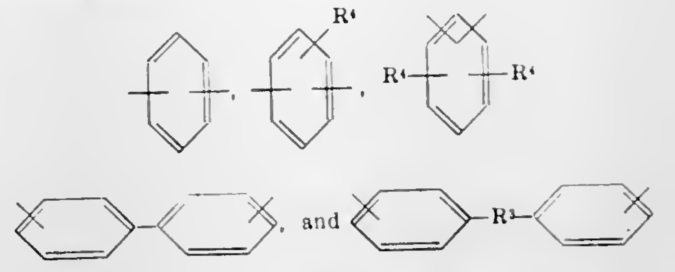


$$\left[-R-\overset{O}{\overset{\|}{C}}-NH-R^1-NH-\overset{O}{\overset{\|}{C}}-\right]_n$$

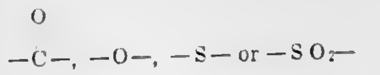
wherein R is either



and R^1 is either



wherein R^3 is either an alkylene radical having 1–3 carbon atoms,



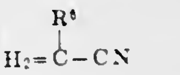
$$-\overset{O}{C}-,\ -O-,\ -S-\text{ or }-SO_2-$$

and R^4 is an alkyl group of 1–3 carbon atoms and n is a positive integer sufficiently high to provide a film-forming polymer having an inherent viscosity at 25° C. of at least 0.15 measured at about 0.5% polymer solids in N-methyl pyrrolidone;

(B) the acrylic polymer is

(a) 1–15% by weight of at least one α,β-unsaturated carboxylic acid,

(b) 30–80% by weight of at least one nitrile of the formula



$$CH_2=\overset{R^6}{\overset{|}{C}}-CN$$

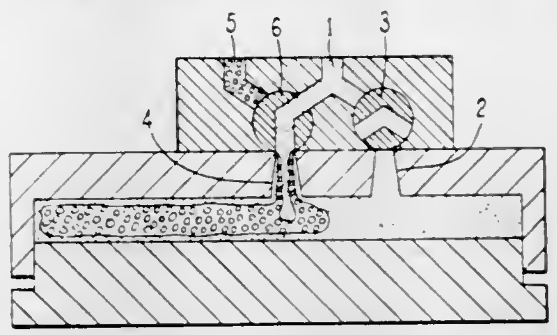
wherein R^6 is either hydrogen and methyl, and

(c) 15–65% by weight of an alkyl acrylate or an alkyl methacrylate having 1–12 carbon atoms in the alkyl groups;

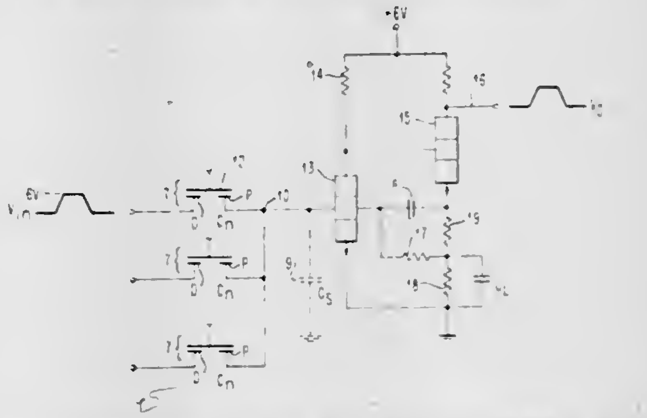
the novel multi-layered metal conductor of this invention has excellent electrical and physical properties, such as a high dielectric strength, a high cut-through temperature, excellent abrasion resistance and flex resistance, and in particular, has a low electrical dissipation factor at elevated temperatures.

T904,007
PRODUCTION OF LAMINAR ARTICLES
Paul Johnson Garner, Thorpe Bay, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Nov. 26, 1971, Ser. No. 202,459
Claims priority, application Great Britain, Nov. 30, 1970, 56,695/70
Int. Cl. B29d *27/00*
U.S. Cl. 264—45
2 Sheets Drawing. 31 Pages Specification

A process in which a skin and core materials are sequentially injected into a mould cavity, wherein skin material is injected through a first sprue channel and core material and also, optionally, skin material, is injected through one or more sprue channels displaced from the first, the amount of skin material injected through the first sprue channel being insufficient to fill the mould cavity and the total amount of skin material injected being in an excess of that required in the final moulding so that subsequent injection of core and/or skin material forces said excess back through a sprue channel through which only skin material was injected. This enables the distribution of skin material relative to core material in the moulding to be modified.



T904,008
CAPACITIVE MATRIX SENSING METHOD AND APPARATUS
William George Crouse, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 30, 1971, Ser. No. 203,390
Int. Cl. G08c *1/00*
U.S. Cl. 340—365 C
2 Sheets Drawing. 14 Pages Specification



A low impedance current integrating amplifier is utilized as a sensor for a high impedance capacitive matrix in which changes in capacitance at the cross points of the matrix which depart from a given threshold value are to be sensed.

T904,009
PHOTOGRAPHIC SILVER RECOVERY PROCESS
Paul J. Delmore, 1669 Lake Ave., Rochester, N.Y. 14650
Filed Dec. 27, 1971, Ser. No. 212,690
Int. Cl. C22d *1/12;* **C22b** *11/00*
U.S. Cl. 204—109
No Drawing. 7 Pages Specification

A photographic silver recovery process involves the production of crude silver containing about 97% silver, 1% lead, 1% copper and 1% of other impurities. To separate the silver, the crude silver is cast in the form of anodes and the silver plated out in an electrolytic cell containing silver nitrate electrolyte. As the plating process proceeds, the concentration of lead nitrate and copper nitrate formed in the electrolyte increases. It is desirable to remove excess lead and copper from the electrolyte. A portion of the electrolyte is first treated with silver oxide. The resulting sludge contains, for example, about 30% silver oxide, 5% each of lead and copper hydroxides (calculated as silver, lead and copper) and varying amounts of silver nitrate solution. In order to avoid an explosion which may result from direct smelting of the sludge, it is first treated with hydrochloric acid or sulfuric acid solution and the resulting silver chloride or silver sulfate sludge is then smelted to obtain silver substantially free of lead and copper.

T904,010
REGENERATIVE VANADIUM COORDINATION CATALYST PROCESS

Tsuneichi Takeshita, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 27, 1971, Ser. No. 212,762
Int. Cl. C08f *1/56, 15/04*
U.S. Cl. 260—80.78
No Drawing. 9 Pages Specification

A process for polymerizing α-olefins in the presence of a regenerative coordination catalyst which is a mixture of:

A. The reaction product formed of an organic halogenating agent of the formula $R(CX_3)_n$ per mole of V_2O_5, R being aryl, haloaryl, haloalkyl, alkaryl, or haloalkaryl; X being halogen; and *n* being 1–3; and

B. An organoaluminum compound.

The process and catalysts are effective for polymerizing homopolymers and copolymers of α-olefins including copolymers of EPDM elastomers.

Polymerization can be carried out with conventional methods as bulk, solution, and slurry polymerization techniques.

T904,011
PROCESS FOR REMOVING METHYL p-FORMYLBENZOATE FROM MIXTURES AND NOVEL ANILS OBTAINED THEREFROM

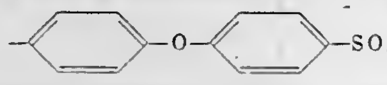
Edward U. Elam, 702 Yadkin St. 37662, and Max A. Weaver, Rte. 8 37664, both of Kingsport, Tenn.
Filed Jan. 28, 1972, Ser. No. 221,760
Int. Cl. C07c *101/42*
U.S. Cl. 260—471 R
No Drawing. 9 Pages Specification

Process for removing methyl p-formylbenzoate from a mixture thereof with one or more other esters of aryl carboxylic or dicarboxylic acids by adding to a solution of the mixture a primary arylamine to form an insoluble anil of the arylamine and methyl p-formylbenzoate and recovering the anil.

T904,012
AROMATIC POLYMERS CONTAINING A CONDUCTIVE FILLER

Philip Anthony Staniland, Welwyn Garden City, and Michael Whale, Aylesbury, England, assignors to Imperial Chemical Industries Limited, London, England
Filed Feb. 1, 1972, Ser. No. 222,700
Claims priority, application Great Britain, Feb. 1, 1971, 3,605/71
Int. Cl. H01b *1/06*
U.S. Cl. 252—503
No Drawing. 12 Pages Specification

Electrically conductive compositions comprising aromatic polymers containing the repeating units —Ar—Q—; Ar being a bivalent aromatic residue and Q being —CO— or $—SO_2—$, provided that Ar and Q may vary from unit to unit in the polymer chain, at least some of the Ar units having an aromatic ether group in the polymer chain ortho or para to at least one Q group; and up to 50 weight percent of carbon black as a conducting filler are disclosed. Preferred are the thermoplastic polysulphones such as those having repeating units of the formula:



The composition optionally contains a quantity of metal powder, such as aluminium, silver, copper or the like for more even distribution of heat in the resulting article. The compositions disclosed are susceptible to known fabrication methods as applied to other thermoplastic materials including extrusion, casting, blow-moulding, injecting and calendering.

The electrically conductive properties of the resulting articles are used to advantage in heating elements, conductors and resistors among other applications. Even a small amount of the electrically conducting filler, of the order of 0.1 weight percent, results in an article that does not accumulate static electricity. When larger amounts of the electrically conductive filler are used the articles may be conveniently electroplated to form capacitor electrodes, printed circuitry and the like. When an electrically conductive article is produced from the compositions disclosed the electrodes therefor are inserted into the composition during the moulding cycle to reduce contact resistance.

Articles are rendered even more resistant to high temperatures by cross-linking during or after fabrication by irradiation or ionising radiation.

T904,013
ARTICLES COATED WITH A COATING COMPOSITION OF ETHYLENE-VINYL ACETATE COPOLYMER

Bruce Allan Beardwood, 104 Broadbent Road, and Paul Edward Sample, 308 Walden Road, both of Wilmington, Del. 19803; and Bert Sorelle Gorton, 400 N. Union St., Kennett Square, Pa. 19348
Continuation of application Ser. No. 35,572, May 7, 1970, and a continuation-in-part of application Ser. No. 695,853, Jan. 5, 1968, both now abandoned. This application Feb. 25, 1972, Ser. No. 229,511
Int. Cl. C09j *7/02*
U.S. Cl. 117—76 A
No Drawing. 18 Pages Specification

An article of manufacture of a moisture-resistant and heat-sealable, self-supporting film structure comprising a base film of organic polymeric material, such as polyethylene terephthalate, polypropylene, or cellophane, having firmly adhered to at least one surface thereof a coating coated from an aqueous dispersion comprising, based upon the total coating weight, between about 60 and about 70 parts by weight of an ethylene/vinyl acetate copolymer having an ethylene content of 70% to 85% by weight, based upon the copolymer weight; between about 20 and about 25 parts by weight of a wax, such as paraffin, microcrystalline, natural and synthetic waxes, having a melting point of at least 60° C.; between about 5 and about 15 parts by weight of a dispersing agent of sodium-ammonium rosinates having at least 75% ammonium rosinate content; between about 0.5 and about 5 parts by weight of ammonium proteinate; between about 1 and about 10 parts by weight of a polymerized rosin ester, such as the glyceryl esters of polymerized wood rosin acid and hydrogenated wood rosin; and between about 0.5 and about 5 parts by weight of a stearate salt of a metal selected from Group II of the Periodic Table and having an atomic number between 12 and 30, such as calcium, magnesium and zinc, said aqueous dispersion having a pH between about 9 and about 12. The dispersion may also contain between 0.1 and 10 parts of a particulate, e.g., mica, bentonite, steatite talc, and vinyl chloride polymers, having a particle size between 0.5 and 10 microns. The base film may also bear a vinylidene chloride polymer beneath the coating.

T904,014
LEACHING/HEATING PROCESS FOR POTASSIUM TETRATITANATE FIBERS

David P. Fields, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Mar. 15, 1972, Ser. No. 234,879
Int. Cl. C01g *23/00*
U.S. Cl. 423—598
1 Sheet Drawing. 2 Pages Specification

Fibrous potassium titanate is acid leached to a

$$K_2O/TiO_2$$

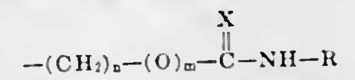
molar ratio of 1/8 and the resultant product, the predominate crystal structure of which is potassium octatitanate,

is then heated to a temperature of 400° C. to 700° C. to remove water. Fibers so obtained are especially useful as a reinforcement material for plastics. Acid leaching reduces the susceptibility of the fibers to moisture pick-up.

T904,015
PHOTOGRAPHIC SENSITIZING DYES HAVING IMPROVED SOLUBILITY

Leslie G. S. Brooker, deceased, by Nancy G. Broderson, executor, 183 Main St. 14604, and Donald W. Heseltine, Kodak Park 14650, both of Rochester, N.Y.
Filed Mar. 30, 1972, Ser. No. 239,776
Int. Cl. G03c *1/12*
U.S. Cl. 96—131
No Drawing. 29 Pages Specification

Cyanine and merocyanine dyes having improved solubility are provided. These dyes contain at least one solubilizing group having the formula



$$-(CH_2)_n-(O)_m-\overset{\overset{\displaystyle X}{\|}}{C}-NH-R$$

wherein *n* is 0, 1 or 2; *m* is 0 or 1; X is oxygen or sulfur, and R is a carboxyalkyl group which typically has 2 to 5 carbon atoms and includes 1 or 2 carboxyl moieties. Light sensitive silver halide emulsions containing such dyes are also provided. The feature dye-solubilizing group can be attached to the heterocyclic nuclei of the dyes, such as to a heterocyclic nitrogen atom, or to the methine chain linking the heterocyclic nuclei.

T904,016
LAMINAR ARTICLE WITH FUSED INTERFACE

William Bauer, Jr., 2046 Winthrop Road, Huntingdon Valley, Pa. 19006, and Newman M. Bortnick, 509 Oreland Mill Road, Oreland, Pa. 19075
Filed Apr. 17, 1972, Ser. No. 244,846
Int. Cl. A47g *5/02*
U.S. Cl. 161—254
No Drawing. 8 Pages Specification

One or two non-tacky film(s) or sheet(s) of the same or different composition formed of a polymer of one or more monoethylenically unsaturated monomers, such as of homopolymers or copolymers of vinyl chloride, butyl methacrylate, or other acrylic acid ester or methacrylic acid ester, e.g. a multistage polymer of U.S. patent 3,562,235 (especially the butyl acrylate, 1,3-butylene glycol diacrylate, methyl methacrylate, methacrylic acid copolymer of Ex. 1 therein) is or are continuously fed to the nip between two moving stainless steel belts, on one or both sides of a monomer/polymer sirup also being fed into the nip for polymerization thereof during travel of the film(s) and sirup between the belts, such as in equipment disclosed in U.S. Patent 3,376,371, to form a two-ply or three-ply laminate.

The sirup may be composed of a solution of polymethyl methacrylate, or of a copolymer of at least 50% methyl methacrylate with at least another monomer, such as styrene, acrylonitrile, vinyl acetate, or a $(C_1–C_8)$alkyl ester of acrylic acid or of methacrylic acid, in methyl methacrylate or in a mixture thereof with at least another of the monomers mentioned.

T904,017
RADIOGRAPHIC ELEMENTS CONTAINING ANTIHALATION DYES

Allan G. Millikan, 5417 E. Hawthorne St., Tucson, Ariz. 85711, and Edward J. Seus, Kodak Park Works, Rochester, N.Y. 14650
Filed Apr. 21, 1972, Ser. No. 246,246
Int. Cl. G03c *1/84, 1/92, 1/02*
U.S. Cl. 96—84
No Drawing. 44 Pages Specification

Radiographic elements are comprised of a support on which there is coated a surface latent image silver halide emulsion layer and a fogged internal latent image silver halide emulsion layer and contain a dye in the fogged emulsion layer which is adsorbed to the silver halide grains and which functions to control halation. Typical dyes which are useful for this purpose are cyanine, complex cyanine, merocyanine and hemioxonol dyes. In processing of the element, the dye is removed together with the silver halide grains to which it is adsorbed. Elements in which the surface image emulsion layer is spectrally sensitized in the region of 600 to 650 nanometers, and in which the dye which is incorporated in the fogged emulsion layer to control halation absorbs in this same region, are especially advantageous. Incorporation of two different dyes in the fogged emulsion layer, such as a combination of anhydro-3,9-diethyl-5,5′-dimethoxy-3′-(3-sulfopropyl)thiacarbocyanine hydroxide and anhydro-3′,9-diethyl-5′-methoxy-5-phenyl-3-(3-sulfobutyl)oxaselenacarbocyanine hydroxide, is particularly useful.

PATENTS

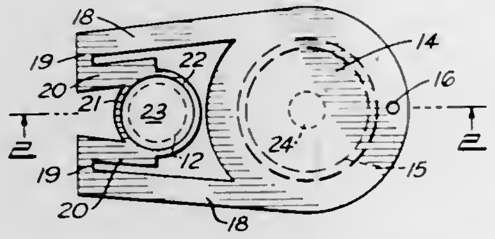
GRANTED NOVEMBER 7, 1972

GENERAL AND MECHANICAL

3,702,012

TOILET TANK FLUSH VALVES

Samuel M. Bennett, 362 Central Avenue, Brighton, Colo.
Filed July 23, 1971, Ser. No. 165,041
Int. Cl. E03d *1/34*
U.S. Cl. 4—57 P **4 Claims**

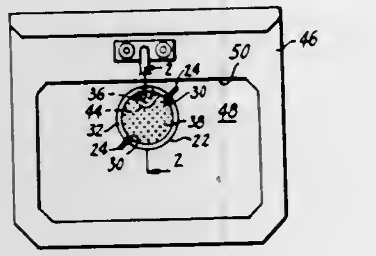


A flat sheet of flexible material of uniform thickness provided adjacent its forward extremity with an opening adapted to fit about the overflow pipe of a conventional toilet tank and provided adjacent its rear extremity with a circular disc adapted to fold down upon the flush valve fitting of the tank. An open-bottomed float bulb is formed on the lower surface of the disc so as to enter and close the fitting to retain water in the tank. When the disc is lifted, the bulb will buoyantly arise in the tank to open the fitting to flush the tank.

3,702,013

HAIR CATCHING DEVICE

Meril D. Gebert, 101 Expando Street, Vallejo, Calif.
Filed Dec. 9, 1970, Ser. No. 96,337
Int. Cl. E03c *1/20, 1/26*
U.S. Cl. 4—288 **1 Claim**



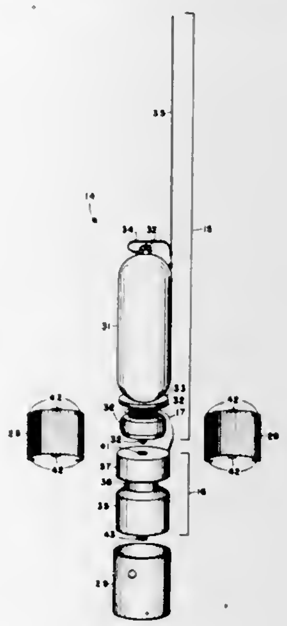
A convex screen extending upward from a circular housing which has an opening therein extending into a downward tube along one portion thereof.

3,702,014

SQUIB EJECTED MARKER BUOY

James L. Rabon; Warren H. Biegler, and Raymond E. Kelly, all of Panama City, Fla., assignors to The United States of America as represented by the Secretary of the Navy
Filed Feb. 19, 1971, Ser. No. 116,779
Int. Cl. B63b *21/52*
U.S. Cl. 9—8 R **9 Claims**

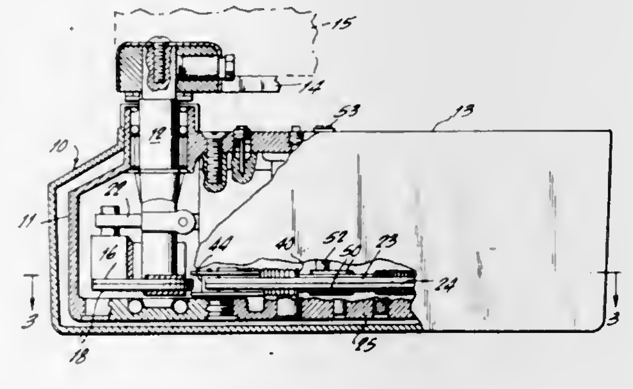
The invention disclosed is an improved buoy and storage-launching arrangement therefor. The buoy has a buoyant body portion with a spring extension protruding upwardly from the upper portion thereof. A spool containing a suitable length of lightweight line, which may be unwound axially therefrom, is secured to the lower portion of the body portion. Clip means secure the spring extension to the side of the device and secure the body to an anchor, which has an explosive actuation squib thereon, in such a manner as to form a compact cylindrical arrangement which may be explosively expelled from a cylindrical storage compartment.



3,702,015

HOLD OPEN ASSEMBLY FOR CHECKING FLOOR HINGE

Conrad C. Blom, Landrum, S.C., assignor to Bommer Spring Hinge Co., Inc., Landrum, S.C.
Filed Oct. 13, 1971, Ser. No. 188,828
Int. Cl. E05f *3/20, 3/22*
U.S. Cl. 16—55 **6 Claims**

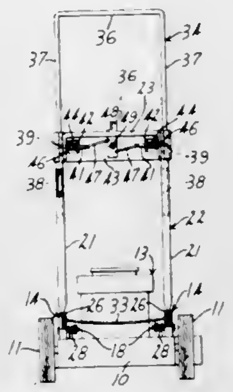


A hold open assembly for a checking floor hinge is disclosed in which a cam having a step in the cam face is yieldably engaged by a spring loaded cam follower roller. In the non-hold open position substantially all of the loading is removed from the cam follower. A simplified mechanism is provided to change the assembly from the non-hold open to the hold open condition.

3,702,016

HANDLE UNIT FOR LAWN MOWER

Ernest W. Keesee, 3767 South Court Street, Montgomery, Ala.
Filed March 24, 1971, Ser. No. 127,522
Int. Cl. A47b *95/02*
U.S. Cl. 16—111 **10 Claims**

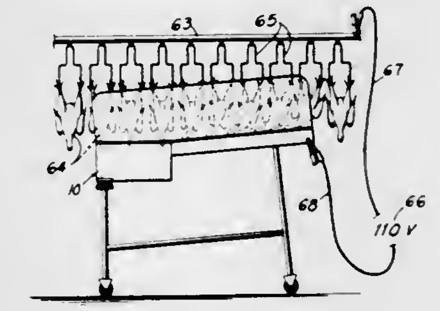


A lower handle member having depending legs pivotally connected to upstanding brackets on mower housing with stop members at opposite sides of legs. Springs urge legs toward brackets and release member moves legs away from brackets permitting angular movement of legs. Upper handle member having depending legs is adjustably connected to legs of lower handle member and retained at selected positions by releasable means.

3,702,017

POULTRY STUNNING APPARATUS

Ernest E. Lewis, Flowery Branch, Ga., assignor to Gainsville Machine Company, Inc., Gainsville, Ga.
Filed Dec. 17, 1970, Ser. No. 98,993
Int. Cl. A22c *21/00*
U.S. Cl. 17—11 **13 Claims**

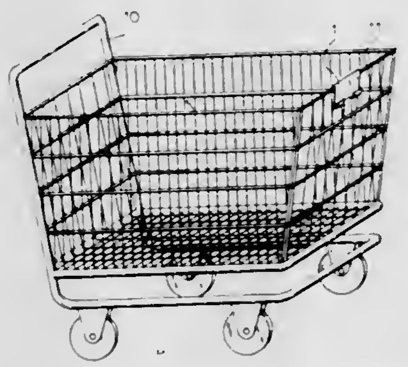


Method and apparatus for stunning poultry as they are moved along a predetermined path in a poultry processing operation. The stunning apparatus includes an upwardly open reservoir means detailed for containing a predetermined amount of liquid. An upwardly inclined ramp means is connected to one edge of the reservoir means. The inclined ramp means includes an upper surface detailed in flow communication with the reservoir means. The stunning apparatus includes shield means extending upwardly from opposite sides of the reservoir means and the inclined ramp means to define an upwardly open channel therebetween. A supply conduit including automatic valve control means is provided for maintaining liquid in the reservoir means at a predetermined level. The reservoir means includes pump means for delivering liquid under pressure to sprayer means which are supported along opposite sides of the reservoir means and adjacent the inclined ramp means. The reservoir and the inclined ramp means are supported at a predetermined location above a supporting surface by support means. Electrical insulator means are provided between the support means and the reservoir and inclined ramp means. The stunning apparatus is supported at a predetermined location relative to a poultry conveying apparatus whereby poultry conveyed by the conveying apparatus will pass through the stunning apparatus. One terminal of an electric current circuit is connected to the conveying apparatus and the other terminal of the electric current circuit is connected to the poultry stunning apparatus whereby poultry passing therethrough will be stunned due to the completion of the electric circuit between the conveying apparatus and the stunning apparatus through the poultry by the spraying of the electrical conducting liquid contained in the reservoir means onto the poultry as they are conveyed along the predetermined path.

3,702,018

HANGER ARRANGEMENT

Philip C. Wood, 1101 New Hampshire Avenue, Apt. 521, Washington, D.C.
Filed Dec. 9, 1970, Ser. No. 96,494
Int. Cl. A44b *21/00*
U.S. Cl. 24—73 B **6 Claims**

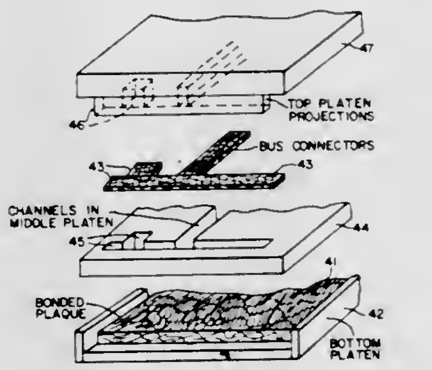


An S-shaped hanger with a tongue adapted to fit on a standard four-wheel supermarket basket to hold a folding two-wheel shopping cart for carriage with the supermarket basket.

3,702,019

METHOD OF MAKING DIFFUSION BONDED BATTERY PLAQUES

William Pollack, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed April 13, 1971, Ser. No. 133,549
Int. Cl. B23p *13/00*
U.S. Cl. 29—2 **6 Claims**



A flexible, expansible, porous, metal fiber electrode plaque is made by (1) dispersing metal fibers in a viscous liquid (2) removing the viscous liquid by vacuum filtration to provide a metal fiber felt of contacting fibers (3) metallurgically bonding the contact points of the fibers in the felt together to provide bonded annealed fibrous plaques and bus connectors (4) coining the annealed plaque to provide a plaque having a body portion of between 70 and 97 percent porosity and a bus connector portion of up to 70 percent porosity, by pressing the bus connectors into contact with predetermined areas of the plaque and then (5) metallurgically bonding the contact points of the plaque and bus connectors together.

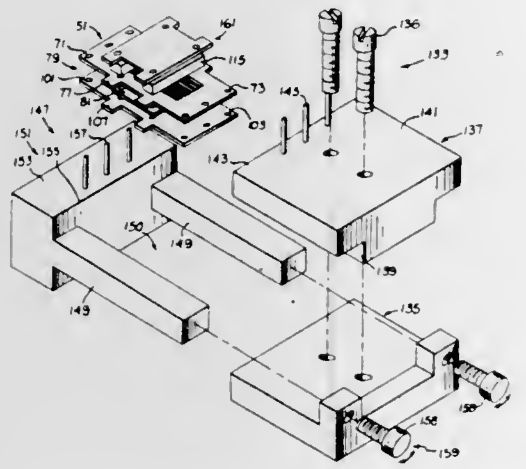
3,702,020
ELECTRODE ALIGNMENT AND ASSEMBLING DEVICE

Donald L. Say, Seneca Falls, N.Y., assignor to GTE Sylvania Incorporated

Continuation-in-part of Ser. No. 860,625, Sept. 24, 1969, abandoned. This application May 5, 1971, Ser. No. 140,526

Int. Cl. H01j *9/06, 9/10, 9/46*

U.S. Cl. 29—25.19 **9 Claims**



A device for assembling and aligning the electrode planes of a multibeam electron gun structure for an electron discharge device, such as a high resolution cathode ray tube which utilizes a defined array of collimated electron beams provided by the multibeam single gun structure. The device facilitates aligning a planar arrangement of separate control electrode members, forming an aperture array, with at least one accelerating-collimating electrode plane having a similar array of apertures. The accelerating-collimating electrode so oriented in spaced and substantially parallel relationship with the control grid plane provides a collimated array of beams directed to impinge the cathodoluminescent screen in a defined pattern array.

3,702,021
METHODS OF MAKING HEAT EXCHANGERS

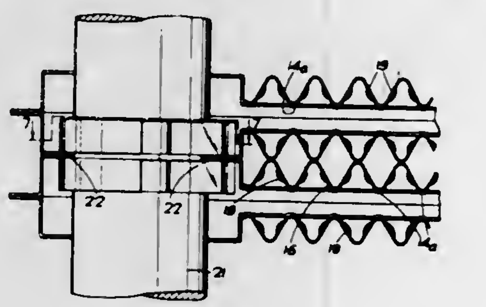
John Anthony Bartlam Wolfe, and John Edwin Frederick Clark, both of London, England, assignors to Chrysler United Kingdom Limited, London, England

Filed March 2, 1970, Ser. No. 15,600

Claims priority, application Great Britain, March 4, 1969, 11,568/69

Int. Cl. B21d *53/00;* **B21k** *29/00;* **B23p** *15/26*

U.S. Cl. 29—157.3 D **5 Claims**



A method of making a heat exchanger of the kind consisting of a stack of sheet metal pressings in face to face relation, adjacent pairs of pressings providing between them alternately channels for flow of coolant and spaces for flow of air, in which method the pressings are joined together by cold welding operations.

3,702,022
METHODS OF MAKING HEAT EXCHANGERS

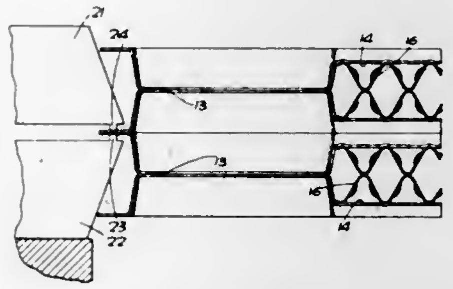
Anthony John Duke, Stoke, and Horace John Dagley, Rugby, both of England, assignors to Chrysler United Kingdom Limited, London, England

Filed March 16, 1970, Ser. No. 19,777

Claims priority, application Great Britain, March 20, 1969, 14,744/69

Int. Cl. B21d *53/00;* **B21k** *29/00;* **B23p** *15/26*

U.S. Cl. 29—157.3 D **6 Claims**



A method of making a heat exchanger of the kind comprising a stack of sheet metal pressings in face to face relation, adjacent pairs of pressings providing between them alternately channels for flow of coolant and spaces for the flow of air, the method consisting of cold welding the pressings together.

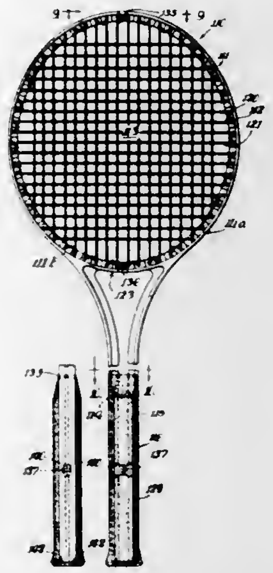
3,702,023
METHOD OF FORMING A RACQUET

Samuel H. Melnick; Samuel W. Landsman, both of Chicago, and Walter A. Stromski, Des Plaines, all of Ill., assignors to Midland Sporting Goods Company, Inc., Chicago, Ill.

Division of Ser. No. 738,634, June 20, 1968, Pat. No. 3,582,073. This application March 22, 1971, Ser. No. 126,851

Int. Cl. B23p *15/16, 19/04*

U.S. Cl. 29—163.5 **11 Claims**



A method of forming a game-playing strung racquet construction wherein the frame is cast of metal. The frame may be formed of a high tensile strength alloy, such as an aluminum alloy.

3,702,024
METHOD OF LINING METALLIC WALLED CARRIERS

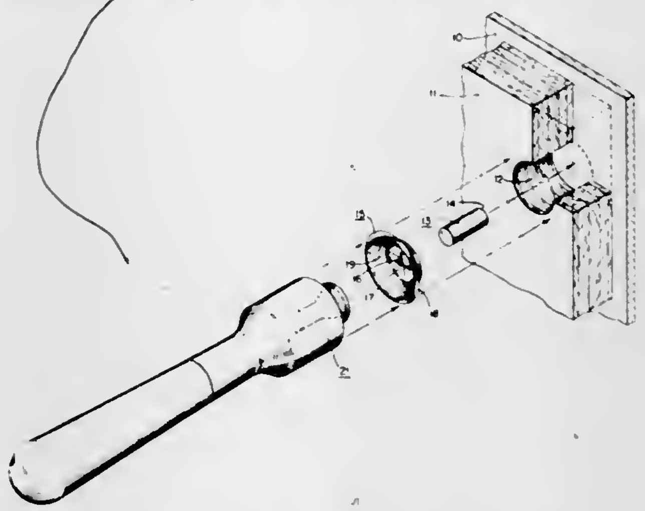
Charles P. Baker, Jr., Hinsdale, Ill., assignor to Omark Industries, Incorporated, Portland, Oreg.

Division of Ser. No. 723,502, April 23, 1968, abandoned. This application Nov. 10, 1969, Ser. No. 875,599

Int. Cl. B23q *17/00*

U.S. Cl. 29—407 **1 Claim**

Method and apparatus for securing liners to metallic walled cargo carriers including an end weldable stud adapted to pass through an aperture in the liner and to be end welded to the metallic wall of the cargo carrier by means of an electric stud end welding technique together with a spring retainer including a thin flange on one end larger than the aperature in the wall panel and spring fingers projecting inwardly and away from the flange and into the aperature of the panel to permit the retainer to fit flush with the outer surface of the wall panel and to grip the stud to secure the wall panel in engagement with the metallic wall of the cargo carrier.



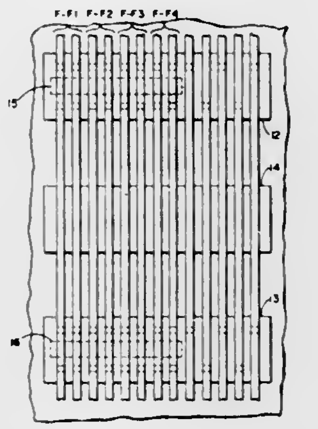
3,702,025
DISCRETIONARY INTERCONNECTION PROCESS

Alva I. Archer, Clearwater, Fla., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 12, 1969, Ser. No. 823,741

Int. Cl. B01j *17/00*

U.S. Cl. 29—574 **1 Claim**



A process wherein numerous identical or similar cells are formed into a continuous chain of such cells on a single semiconductor wafer is shown. The cells are cataloged as either good or bad cells and then a layer of dielectric followed by a pattern of conductors is deposited over all of the cells. Connections are discretionarily made to the good cells by omitting to etch holes through the dielectric layer over the contacts of bad cells and by shorting across all cells and then removing the shorts across the good cells.

3,702,026
RAZOR

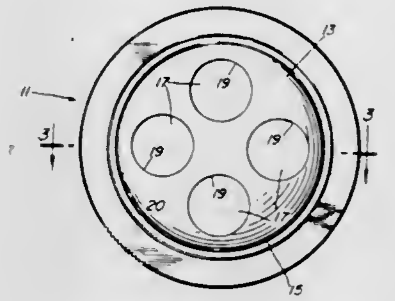
Harold W. Scholin, Park Ridge, Ill., assignor to Unirazor, Ltd., Northbrook, Ill.

Continuation of Ser. No. 652,744, July 12, 1967, abandoned, which is a continuation of Ser. No. 452,787, May 3, 1965, abandoned. This application Oct. 18, 1971, Ser. No. 190,274

Int. Cl. B26b *21/42, 21/54*

U.S. Cl. 30—49 **9 Claims**

A razor comprising a circular, spherically curved blade formed with circular, edge sharpened shaving openings equally spaced circularly about the center of the blade, the sharpened edges of the openings being formed at the outer convex surface of the blade, by the intersection of said outer surface with spherical surfaces ground in the inner concave surfaces of the blade, at and outwardly of the edges of the holes, so that, by gyrating the convex surface of the blade in contact with a skin surface to be shaved, hair will be sliced off, at the skin surface, by the sharpened peripheral edges of the holes, a ring-like handle being fastened to the blade, at its periphery, to aid in manipulating the same in the performance of the shaving operation.



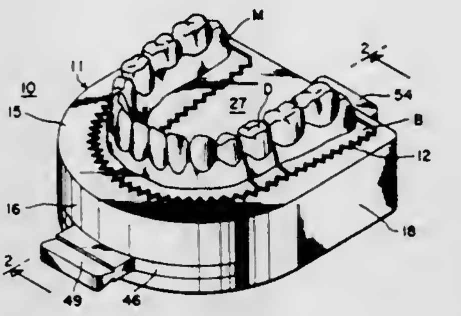
3,702,027
DIE HOLDER FOR DENTAL LABORATORY

Edwin L. Marshall, White Plains; Harvey Bocian, Jericho, and Neil L. Hauptman, Jamaica, all of N.Y., assignors to So-Mar Dental Studios, Inc., Jamaica, N.Y.

Filed March 8, 1971, Ser. No. 121,822

Int. Cl. A61c *13/00*

U.S. Cl. 32—11 **11 Claims**



A dental restoration fabricating assembly includes a rigid body member having an arch shaped, open-topped cavity with vertically serrated faces and a thin liner member mating and separably nesting in the cavity and provided along its lower border with a peripheral groove. The line is prevented from vertical movement in the cavity by a pair of locking members slideable through opposite openings in the body member and tightly engaging the liner grooves. In employing the assembly the cavity held liner is partially filled with a plastic solidifiable mass and a model is positioned in the mass or the model is cast from the impression and allowed to harden with the mass in the liner. One or more dies may be separated by removing the unlocked liner and dental cast from the cavity, slicing the desired dies and the bonded sections of the liner from the remains of the cast, working the dies as desired, reassembling them in the cavity in their initial positions and then locking them in place by reinsertion of the locking member.

3,702,028
DENTAL IMPLANT EXTRACTING TOOL

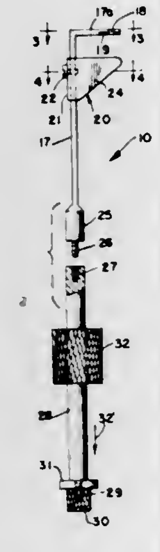
Alfred E. Edelman, 2723 Federal Street, Camden, N.J.

Filed Nov. 7, 1972, Ser. No. 72,606

Int. Cl. A61c *3/10*

U.S. Cl. 32—61 **11 Claims**

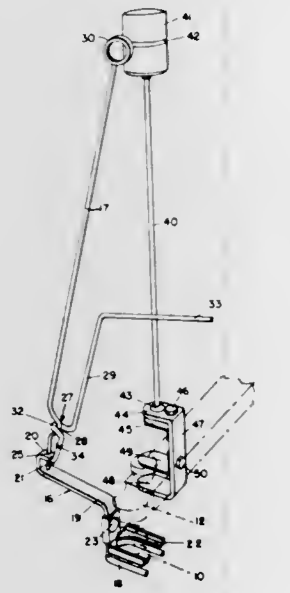
A tool for extracting dental implants of the type having a wide blade, a narrow neck and an enlarged head. The tool includes a shank having a lateral extension at one end thereof formed with a slot to receive the neck of an implant. A retainer is adjustably positioned on the shank to prevent disengagement of the implant neck from the slot. The other end of



the shank is provided with an elongated handle having a weight slidable thereon against a stop, so that impacts may be delivered through the handle and shank to extract the implant from a patient's jaw.

3,702,029
VISUAL AID FOR TRAILER HITCH

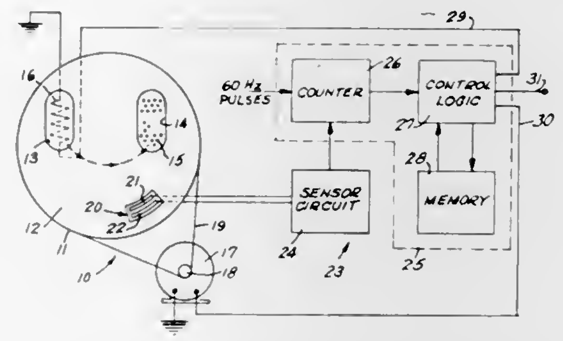
Harold D. Anderson, Jr., Oakesdale, Wash.
Filed Jan. 28, 1971, Ser. No. 110,716
Int. Cl. G01c *5/00*
U.S. Cl. 33—246 AS **6 Claims**



An automotive accessory to assist a driver to accurately back a towing vehicle to align the vehicle-mounted hitch component with the trailer-mounted hitch component when the hitch cannot be seen by the driver wherein an upright rod having a ring-like indicator rotates to indicate fore and aft alignment and a comparison of the relative positions of the vehicle mounted indicator and a trailer-mounted indicator reveals the lateral alignments. The trailer mounted indicator is adjustably mounted to compensate for longitudinal angularity of the vehicle and trailer.

3,702,030
DIGITAL DRYER CONTROL CIRCUIT

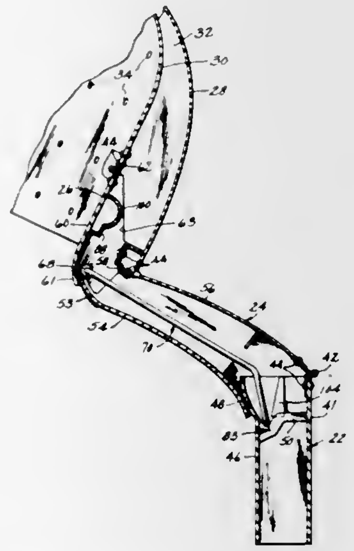
Donald E. Janke, Benton Harbor, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed March 29, 1971, Ser. No. 129,008
Int. Cl. F26b *3/00*
U.S. Cl. 34—33 **11 Claims**



A fabric treating apparatus, such as a domestic clothes dryer, is provided with a digital control circuit and a sensor system which cooperate to terminate a fabric treatment operation when the fabric has reached a desired condition. A digital counter receives and accumulates pulses from a reference source and is repetitively reset by signals from a sensor circuit which provides reset pulses at a rate dependent upon the dryness condition of the fabric load. As the fabric load approaches the desired dryness condition the interval between reset pulses increases, thus allowing the counter to accumulate successively greater counts before being reset, until eventually a preselected count is accumulated which triggers circuitry to terminate the fabric drying operation. After termination of the drying operation the counter serves as a clock and operates in conjunction with an indexable digital memory and associated logic circuitry to control a program of subsequent fabric treatment operations.

3,702,031
HAIR DRYER HOOD TILT MECHANISM

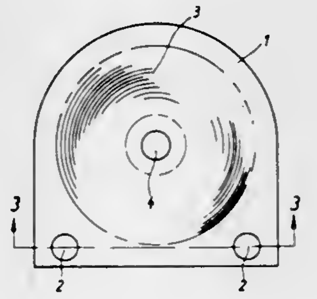
William D. Ryckman, Jr., Asheboro, N.C., assignor to General Electric Company
Filed July 7, 1971, Ser. No. 160,375
Int. Cl. A45d *20/00*
U.S. Cl. 34—99 **9 Claims**



A hair dryer that may be collapsed for carrying and erecting for operation, including a base assembly, a rigid tiltable hood assembly to be positioned about the head of the user for distributing heated air to the head and a strut hinged at both ends to the hair dryer between the hood assembly and base assembly one end of the strut being connected to the hood assembly. A push-rod member pivotally movable about two points and maintained under compression force cooperates with the hinged strut to apply supporting force to the hood assembly when the hair dryer is in the erected position. In the carrying position the push-rod is out of compression so that the hair dryer may be collapsed.

3,702,032
SOUND CARRIER AND REPRODUCING DEVICE FOR USE WITH INSTRUCTION BOOKS AND THE LIKE

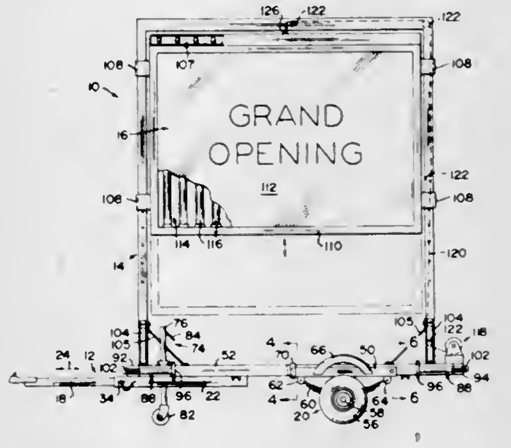
Erich Doring, La-Punt/Chamues-Ch 96, Switzerland
Filed Jan. 13, 1971, Ser. No. 106,201
Claims priority, application Germany, Jan. 13, 1970, P 20 01 283.3
Int. Cl. G09b *1/06;* **G11b** *3/68*
U.S. Cl. 35—8 A **2 Claims**



A sound carrier is affixed where desired by the user onto a printed page of a book or the like and a sound reproducing unit is operatively engaged with the sound carrier by the user through the medium of visually locatable positioning means cooperatively carried by the sound carrier and the reproducing unit.

3,702,033
DISPLAY DEVICE

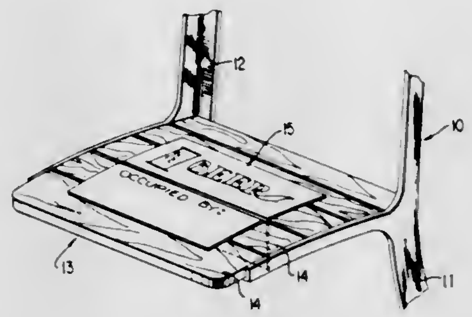
Kelly R. Coleman, 2367 Anna Avenue, Clearwater, Fla.
Filed June 23, 1971, Ser. No. 155,770
Int. Cl. G09f *7/00*
U.S. Cl. 40—129 R **18 Claims**



A portable display device having a base comprising running gear which includes a plurality of wheels and a pulling tongue wherein the wheels may be detachably secured to the base such that the base may be permanently affixed to a given location. A sign is reciprocally mounted on the base by means of a supporting frame such that the sign may be raised or lowered to any desired position through the operation of a lifting mechanism in the form of a power or manually operated winch connected to the sign by a pulley and cable arrangement. Lights may be arranged on both the interior and exterior of the sign and operated by a power supply, in the form of a battery or generator which also may be carried on the base of the sign.

3,702,034
SEAT MARKER

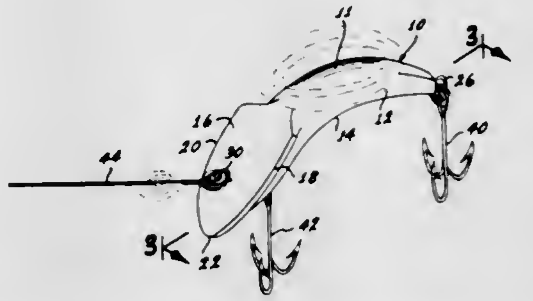
Irving W. Pfeiffer, Springlake, Mich., assignor to Seat Marker, Incorporated, Palatine, Ill.
Filed Sept. 4, 1970, Ser. No. 69,603
Int. Cl. G09f *23/06*
U.S. Cl. 40—320 **8 Claims**



A seat marker made from a sheet of material and folded in a generally V-shaped configuration with flaps for maintaining the same in a substantially flush relationship with a surface of the seat to indicate the occupancy of the same.

3,702,035
FISH LURE

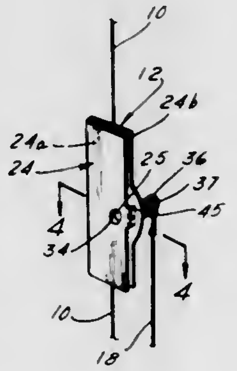
Melkiah E. Pope, Valencia, Calif., assignor to Pope Manufacturing, Inc.
Filed June 4, 1970, Ser. No. 43,414
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.35 **4 Claims**



A fish lure having an arcuate shape and a curved triangular shaped head with flanged edges on the triangular head. The head tapers sharply so that the interaction of the fish lure with water causes a narrow rapid tail action plus sideways erratic darting, so as to be very imitative of a fish.

3,702,036
ADJUSTABLE LEAD LINE CONNECTOR

John McNeill, 210 South Catalina, Apt. 10, Pasadena, Calif.
Filed July 22, 1971, Ser. No. 164,990
Int. Cl. A01k *91/04*
U.S. Cl. 43—44.85 **5 Claims**



An adjustable lead line connector device whereby lead lines having fish hooks attached thereto can be positioned along the lower portion of a fishing line, the connector comprising a flat flexible member which is provided on one inner face thereof with a protruding nipple oppositely disposed from a matching cup-like securing ring. The ring has an inner diameter corresponding to the diameter of the nipple so that when the flexible member is bent and folded along its center the nipple is received within the ring, securing the connector device to the fishing line. The outer edges of the flexible member are provided with a locking means comprising an elongated tongue having an opening therein and a lip member having a slot therein to receive the elongated tongue therethrough. When the tongue is passed through the slot a lead line having a fish hook thereon is attached to the tongue by means of the opening therein.

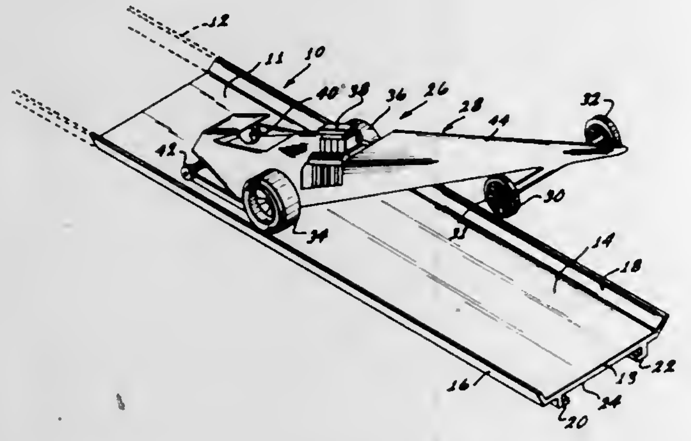
3,702,037
TOY VEHICLE SYSTEM FEATURING PIVOTABLE TOY VEHICLE

Raymond M. Toy; John C. Parker, both of Los Angeles, and Brian S. Prodger, Torrance, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 22, 1971, Ser. No. 117,269

Int. Cl. A63h *11/10*

U.S. Cl. 46—201 **9 Claims**



Several toy vehicle systems each featuring a toy vehicle capable of simulating a dragster wheelie. The vehicle has a forward portion and a two part rearward portion with one part being fixed to the forward portion and the other part being pivotally connected relative the forward portion. When the two parts are engaged, the moment of force of the rearward portion is greater than that of the forward portion, relative a pivot axis, causing the forward portion to assume an upwardly slanted position. When the two parts are not engaged, the forward portion is in a generally horizontal position. Launching mechanisms are provided for constraining the vehicle in a horizontal position even through the the two parts are engaged. Once the vehicle separates from the launching mechanism, the vehicle will do a wheelie. Connectors are also provided which bias the vehicle between its two positions.

3,702,038
TOYS WITH SOUND PRODUCING MEANS

Louise Z. Hakim, P.O. Box 1026, Monroe, La.

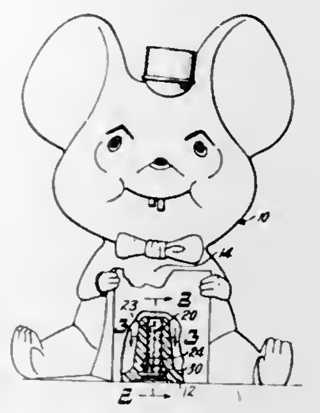
Filed Oct. 29, 1971, Ser. No. 193,756

Int. Cl. A63h *5/00*

U.S. Cl. 46—175 **5 Claims**

Toys incorporate sound producing components in such manner that the components cannot become dislodged from the toy structure. In a first embodiment, the sound producing component is a separate element but is embedded in a boss formed on the toy wall, the boss and wall including interfitting means which engage the component to securely anchor it in place. The material of fabrication of the toy fully envelopes the sound producing component.

In the second embodiment, the sound producing component is formed integrally with the toy and has a conical sound chamber with an associated bellows operated responsive to squeezing of the toy walls.



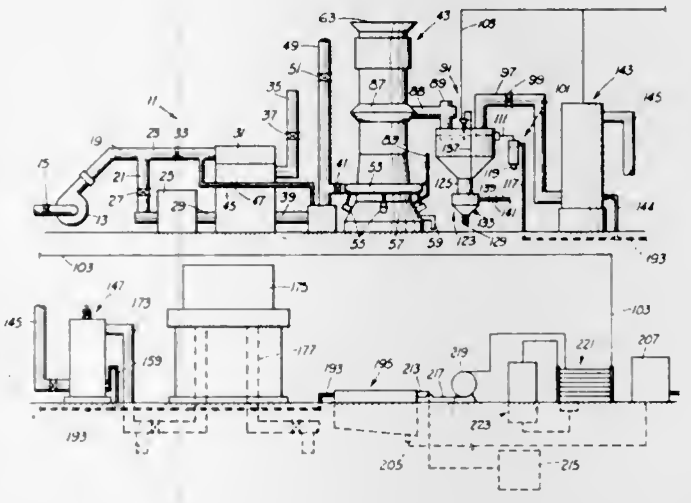
3,702,039
PRODUCTION OF USABLE PRODUCTS FROM WASTE MATERIAL

Kenneth W. Stookey, Markle, Ind., and Anil K. Chatterjee, Tonawanda, N.Y., assignors to Torrax Systems, Inc., North Tonawanda, N.Y.

Filed Aug. 31, 1970, Ser. No. 68,085

Int. Cl. C10j *3/00*

U.S. Cl. 48—111 **14 Claims**



In an apparatus and method of treating waste materials for recovering valuable materials including a fuel gas and liquid hydrocarbons, the waste materials are charged to the upper end of a vertical gasification chamber and preheated air blast is introduced into the hearth thereof. A producer gas is generated within the gasifier at such a temperature that metal, glass and other noncombustibles are reduced to a molten condition. As waste materials move downwardly under gravity, the hot producer gas moves upwardly pyrolyzing an organic portion of the waste materials. The gases evolved in the gasifier are passed from the upper end thereof and contacted with a cooling liquor comprising water. Thus, entrained particulate and a condensable portion including liquid hydrocarbons are separated from the evolved gases into a liquid phase whereby a fuel gas is produced.

3,702,040
VENETIAN BLIND STRUCTURE, MORE PARTICULARLY FOR DOUBLED GLAZED SEALED WINDOW UNIT

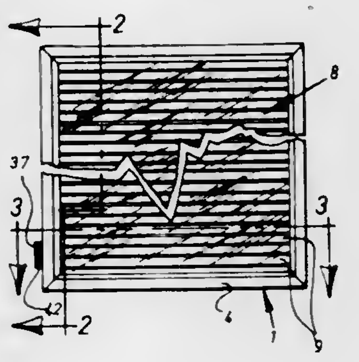
Fernand Roy, 405 Vanier Street, Ville Brossard, Quebec, Canada

Filed June 22, 1971, Ser. No. 155,487

Claims priority, application Canada, July 2, 1970, 087134

Int. Cl. E06b *7/08*

U.S. Cl. 49—64 **10 Claims**



A venetian blind structure comprising a plurality of elongated slats pivotally mounted at their ends in a support frame and means for simultaneously pivoting said slats and for maintaining said slats in parallel planes, said means comprising a wheel secured to the pivot shaft of each slat, pins protruding from said wheel and extending through an opening in a reciprocable actuating member, each opening formed with rack teeth along one edge for engaging said pins, the pins adapted to abut transverse edges of said opening to limit the angular position of said slats, and a mechanism for moving said reciprocable member in two directions. The blind structure is more particularly adapted to be mounted within the air space of a double glazed sealed window unit.

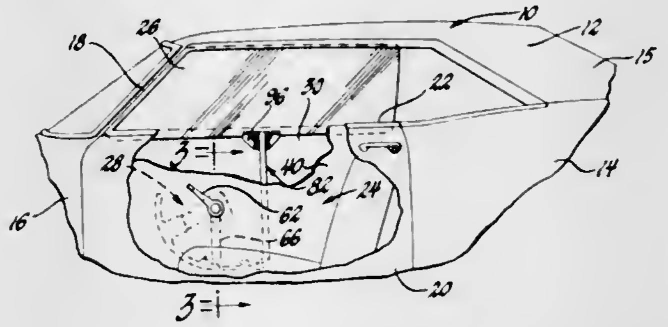
3,702,041
WINDOW REGULATOR

Edward G. Podolan, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 13, 1971, Ser. No. 179,803

Int. Cl. E05f *11/38*

U.S. Cl. 49—348 **3 Claims**



A rotary input type window regulator adapted to move a vehicle mounted window between open and closed positions with a single stroke of an operating handle, the window regulator including an operating handle supported on the body and pivotable through an angular range of less than 180°, a lift arm connected to the handle for unitary pivotal movement therewith, a flexible tape-like drive member connected to the lift arm and to the window, and guide members defining a path of motion for the driver member including a first run extending in a circular arc about the pivot axis of the lift arm and having a radius equal to the length of the lift arm and a second run extending generally parallel to the path of motion traversed by the window. The length of the lift arm is predetermined to effect bodily movement of the drive member sufficient to completely open or close the window in response to pivotal movement of the handle through its angular range.

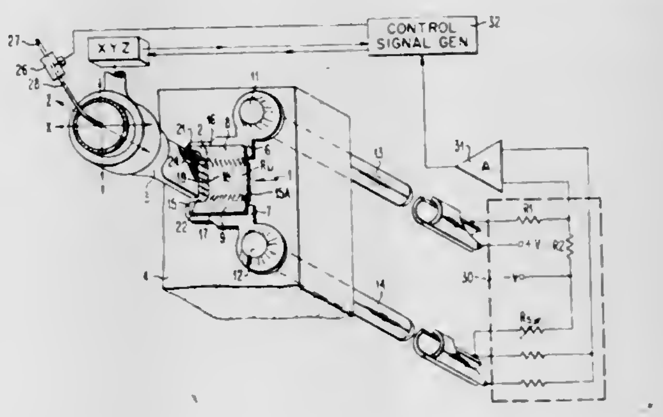
3,702,042
ABRADING APPARATUS

Thomas J. Cochran, Lagrangeville; Charles P. Coughlin, Chelsea; Walter W. Ficker, Fishkill; Charles V. Lent, Poughquag, and Joseph M. Sullivan, Millbrook, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 25, 1970, Ser. No. 92,818

Int. Cl. B24c *3/04*

U.S. Cl. 51—8 **20 Claims**



This patent discloses apparatus for altering the electrical characteristics of electrical and electronic components by trimming or abrading, the rate of abrading being variable and is responsive to changes in the electrical characteristics of the components during the abrading operation. Electrical components that have electrical characteristics that may be altered by the abrading apparatus include resistors, capacitors, inductors, semiconductive devices, and photocells.

The apparatus includes electrical circuitry for both accurate control of the rate of abrasion and enabling production of electrical and electronic components to predetermined characteristics with unusually close manufacturing tolerances. The circuitry includes a highly sensitive Kelvin bridge at each abrading station, the circuitry being programmable for trim pretesting, control of the rate of abrading, and post-testing. The circuitry may also be programmed to abrade a discrete component to predetermined tolerances, and/or abrade one of a pair of components to a predetermined ratio of the electrical characteristic of one component to the electrical characteristic of the other of the pair. Additionally, the circuitry may be programmed to abrade one component in a connected closed loop of components to predetermined tolerances, for example "in circuit" abrading.

The mechanical arrangement of the apparatus provides for sequentially abrading multiple electrical and electronic components which may be positioned on both the upper and lower surfaces of single insulating members such as ceramic substrates. The apparatus is fully mechanized for rapid processing of a high production product through sequential abrading stations and includes stations for rejecting out-of-tolerance components.

3,702,043
LAPPING, HONING OR THE LIKE MACHINES

Donald Burkewood Welbourn; James Derek Smith, both of Cambridge, and Bruce Robert Ashworth Buckley, Leeds, all of England, assignors to C.A.V. Limited, Birmingham, England

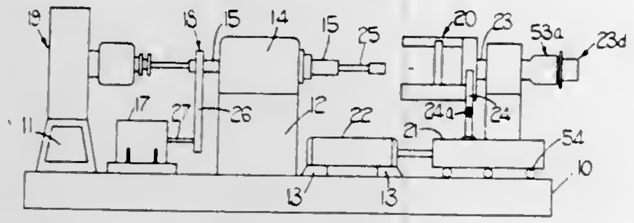
Filed Dec. 10, 1970, Ser. No. 96,954

Claims priority, application Great Britain, Dec. 11, 1969, 60,437/69

Int. Cl. B24b *5/00, 49/00, 5/00*

U.S. Cl. 51—92 R **11 Claims**

A machine for removing material from an internal surface of a workpiece and comprising a workpiece holder which is reciprocably mounted upon a support structure, a tool supporting member in the form of a spindle, the tool supporting member being driven by a motor means and the tool being mounted upon the spindle and connected to an actuator whereby the effective size of the tool can be adjusted. The workpiece holder includes a member which restrains angular movement of the holder and the member mounts a strain gauge whereby a signal can be obtained indicative of the cutting load exerted by the tool upon the workpiece.



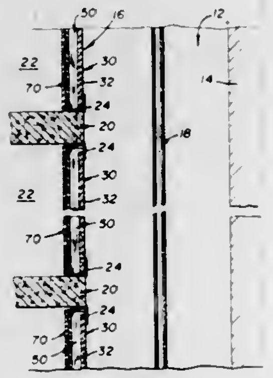
3,702,044
CAVITY SHAFT WALL

Henry A. Balinski, Hoffman Estates, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Nov. 18, 1970, Ser. No. 90,504

Int. Cl. E04b *2/28, 2/80*

U.S. Cl. 52—30 **22 Claims**



A cavity shaft wall capable of withstanding pressure loading, comprising two spaced rows of wall members spaced by studs having means for engaging three vertical sides of each edge of the members comprising the row exposed to the shaft. The means preferably are provided by side flanges which open out into the stud, the flanges being bent to form pockets and being free to expand as the exposed members shrink, as in a fire. Insulating wool and electrical utilities can be accommodated in the air gap formed by the spaced rows.

3,702,045
ARRANGEMENT IN OR RELATING TO A TERRACE FLOOR AND A METHOD FOR THE PRODUCTION OF SAME

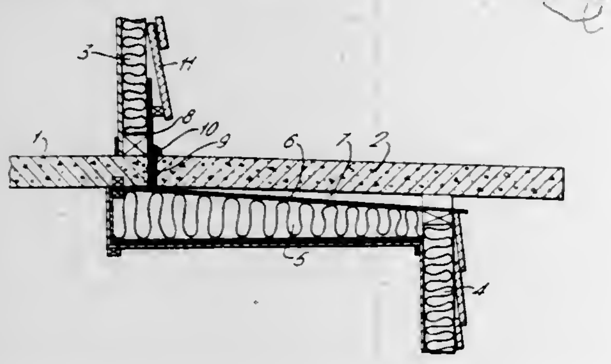
Olav Selvaag, Holmenveien 19, Oslo, Norway

Filed Jan. 18, 1971, Ser. No. 107,360

Claims priority, application Norway, Jan. 26, 1970, 281/70; Dec. 1, 1970, 4611/70

Int. Cl. E04d *1/36, 3/38*

U.S. Cl. 52—58 **10 Claims**



An arrangement of a terrace floor in front of a set back story of a building, which floor is provided with a layer of thermal insulation underneath. A waterproof layer is arranged between the thermal insulation and the terrace floor has an air space in communication with the atmosphere outside the building at least on its top surface and possibly below its base. The terrace floor is separated from the floor inside by a gap. A waterproof sheet or the like is placed in the gap, running from the waterproof layer, over the insulating material below the terrace floor, upwards through the gap and up inside the facing of the exterior wall above.

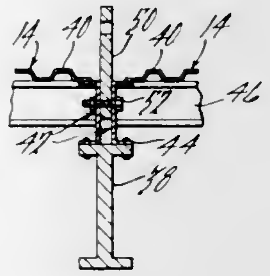
3,702,046
PREFABRICATED BUILDING SECTIONS

James C. Lewis; Scott C. Lewis, and Robert M. Hockett, all of Tulsa, Okla., assignors to Braden Steel Corp., Tulsa, Okla.

Filed Oct. 12, 1970, Ser. No. 79,734

Int. Cl. E04c *2/32, 2/38, 2/50*

U.S. Cl. 52—125 **8 Claims**



A prefabricated building section is disclosed having a corrugated panel with ridges and grooves and a side support channel affixed adjacent a side boundary of the panel and spaced from the nearest ridge thereof to accommodate a corresponding support channel of a like section stacked thereon prior to erection of the building. Additionally, the support channel extends from the panel a sufficient distance to provide clearance for the ridges of a corrugated panel stacked thereagainst to prevent damage thereto. The building sections may also be provided with a lifting lug which is mounted to the support channel for pivotal movement between a projecting position in which it may be engaged by a lifting device and a nonprojecting position in which it serves as a spacer to provide a construction clearance between adjacent sections upon assembly.

3,702,047
GLASS WALL CONSTRUCTION CONSISTING OF A PLURALITY OF GLASS ELEMENTS OF SUBSTANTIALLY U-SHAPED CROSS-SECTION

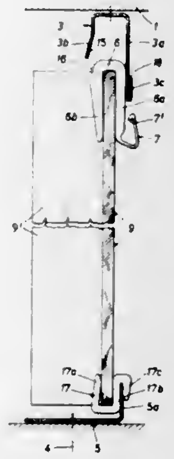
Siegfried Harcuba, Saarbrucken, Germany, assignor to Transglas AG, Chur, Canton of Grisons, Switzerland

Filed July 12, 1971, Ser. No. 161,723

Claims priority, application Germany, July 17, 1970, P 20 35 606.3; March 5, 1971, P 21 10 673.0

Int. Cl. E04b *2/74*

U.S. Cl. 52—241 **8 Claims**



A glass wall construction composed of a plurality of glass elements, each possessing a substantially U-shaped cross-sectional configuration, and intended to be secured within a mounting which can be fixed into the opening of a structure, such as a building wall. This mounting embodies at least an upper rail member and a lower rail member. The leg portions of the glass elements are adhesively bonded in abutting relationship with respect to one another such that the sheet-like webs of all of the glass elements forming the glass wall are disposed in a given plane, which is preferably vertically oriented. Attachment elements, in the form of sliders, serve for resiliently guiding the glass elements with respect to the upper rail member of said mounting at least at the upper region of such glass elements. Each of the sliders is formed as a resilient element which is displaceable with respect to the glass elements and leg members of the mounting. These displaceable slider elements have at least a pair of depending leg portions, and projection means provided at one of said leg portions of each said slider element for partially encompassing a leg of the mounting, and wherein the leg portions of said mounting are configured or accommodated to the shape of the slider elements.

ERRATUM

For Class 52—690 see:
Patent No: 3,702,050

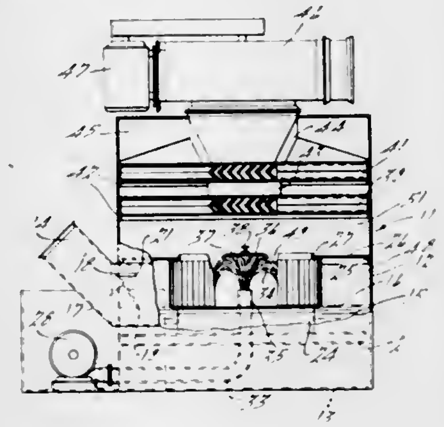
3,702,048
AIR WASHER

Stanley O. Howick, 8120 Barnsbury, Union Lake, Mich.

Filed March 10, 1971, Ser. No. 122,932

Int. Cl. B01d *50/00*

U.S. Cl. 55—238 **3 Claims**



An industrial air washer having a vertical cylindrical housing partially filled with water and a tangential air entrance with an adjustable baffle plate controlling the inlet resistance. The air enters V-shaped baffles circularly arranged around an upwardly flowing water stream which is spread by an inverted conical distributor below a circular distributor plate. V-shaped moisture eliminators and a suction fan are disposed above the baffles.

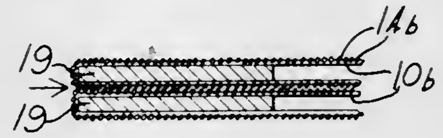
3,702,049
DEVICE FOR CLEANING POLLUTED AIR

Ewel J. Morris, Jr., 901 West Walnut Street, Sylacauga, Ala.

Filed Sept. 24, 1970, Ser. No. 75,048

Int. Cl. B01d *46/40*

U.S. Cl. 55—278 **1 Claim**



Device for cleaning polluted air wherein decontaminant granules anchored in adjacent surfaces of sheets extending alongside and spaced from each other. Deformations in adjacent surfaces receive adjacent portions of granules and retain outer portions of granules in air passageway between adjacent surfaces.

3,702,050
WOOD TRUSS ARRANGEMENT

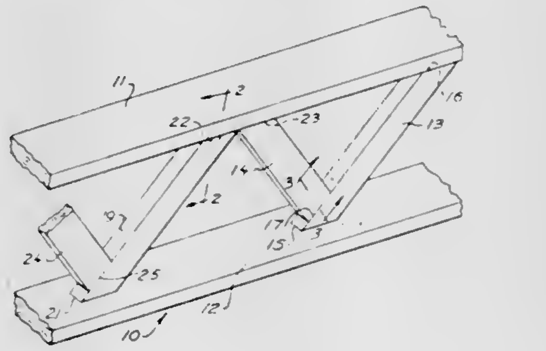
George E. Price, West Vancouver, British Columbia, Canada, assignor to Pacific Coast Pipe Limited, Vancouver, British Columbia, Canada

Continuation of Ser. No. 830,450, Jan. 4, 1969, abandoned. This application Jan. 4, 1971, Ser. No. 103,884

Claims priority, application Canada, June 1, 1967, 991,946

Int. Cl. E04c *3/02, 3/42*

U.S. Cl. 52—693 **2 Claims**



A wood truss, or lattice girder, arrangement with finger scarfing of only alternate generally parallel members to the chords, with oppositely inclined generally parallel web members only to the inclined webs. Material reduction of web to chord to web transference achieved producing a stronger truss with webs of the same size.

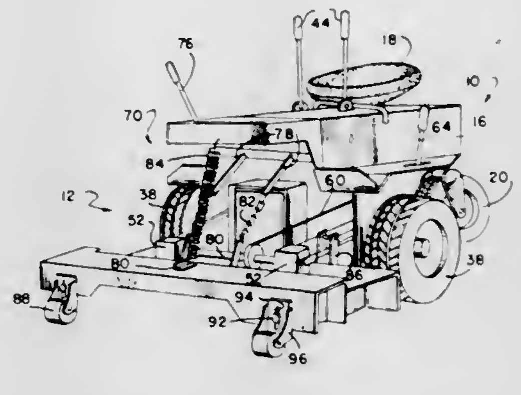
3,702,051
INDEPENDENTLY OPERABLE DUAL DRIVE WHEEL RIDING POWER MOWER

John Deines, P. O. Box 207, Ransom, Kans.

Filed Sept. 8, 1970, Ser. No. 70,227

Int. Cl. A01d *35/26*

U.S. Cl. 56—11.3 **3 Claims**



A riding power mower having a front mounted rotary power mower assembly thereon and further comprising a frame, a motor mounted on the frame, a pair of forward drive wheels each independently driven from the motor through separate transmissions, and a single, trailing support wheel, freely pivotally mounted on a vertical axis.

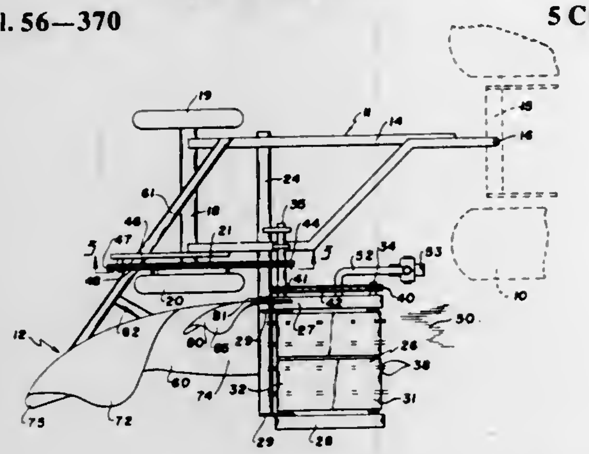
3,702,052
SWATH TURNER

John P. Klassen, 45593 Yale Road West, Chilliwack, British Columbia, Canada

Filed July 9, 1971, Ser. No. 161,861

Int. Cl. A01d *79/00*

U.S. Cl. 56—370 **5 Claims**



Apparatus for inverting material deposited in a field as a windrow, the windrowed material being rotated by a substantially helically-shaped board which keeps a side edge of the windrow in contact with the field to serve as a pivot.

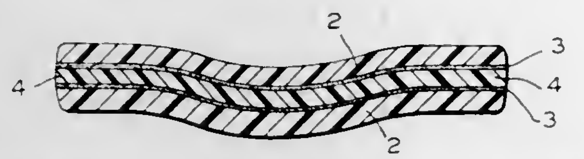
3,702,053
METALLIC YARN

Peter J. Schoots, Nieuwendam; Johannes Thomas Brugmans, Wormerveer, and Klaas Hoogenhout, Brock in Waterland, all of Netherlands, assignors to Lurex, N.V., Amsterdam, Netherlands

Filed Dec. 18, 1969, Ser. No. 886,247

Int. Cl. D02g *3/36, 3/40, 3/12*

U.S. Cl. 57—154 **5 Claims**



A laminated yarn adapted for tone-on-tone or cross dyeing with dispersed dyestuffs comprising metallized transparent films laminated with an adhesive comprising a copolymer of a major portion of polyethylene and a minor portion of a comonomer.

3,702,054
PRODUCTION OF GRAPHITE FIBERS

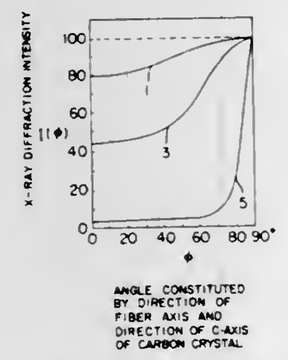
Tadashi Araki; Kiro Asano, and Jun Yamada, all of Tokyo, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed July 27, 1971, Ser. No. 166,448

Claims priority, application Japan, July 28, 1970, 45/65556

Int. Cl. D02g *3/16*

U.S. Cl. 57—157 TS **3 Claims**



Graphite fibers having superior strength and modulus of elasticity can be obtained by twisting carbon fibers at a specified twisting rate, and then graphitizing the twisted yarn.

3,702,055
METHOD FOR MANUFACTURING FALSE TWISTED THREADS FROM THERMOPLASTIC RESIN TAPES

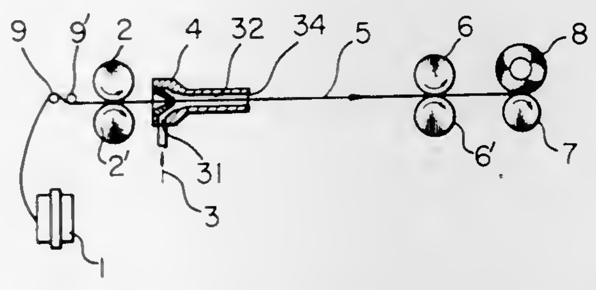
Kenzo Kosaka; Masami Tsunewaki; Hideo Tanaka, all of Nagoya-shi, and Akira Aoki, Inazawa-shi, all of Japan, assignors to Mitsubishi Rayon Company Limited, Tokyo, Japan

Filed Aug. 4, 1969, Ser. No. 847,132

Claims priority, application Japan, Aug. 14, 1968, 43/57477

Int. Cl. D02g *1/02, 1/16*

U.S. Cl. 57—157 TS **25 Claims**



A method for manufacturing false twisted thermoplastic thread from thermoplastic resin tape comprises passing the tape through a region wherein an eddy stream of a high temperature high pressure fluid such as steam, superheated steam and air is present. The eddy stream is produced by eccentrically jetting a high pressure fluid of a temperature not lower than the plasticizing point having the thermoplastic resin tape into a cylindrical thread forming tube. The thermoplastic resin tape is false twisted so as to form a cylindrical bundled thread and simultaneously thermoset in the bundled form all by the effect of the eddy stream.

3,702,056
WORLD TIMEPIECE

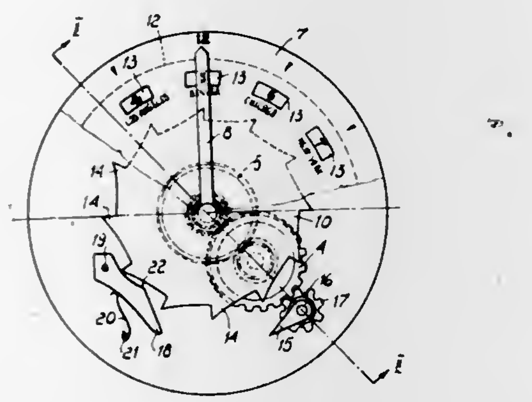
Armando Zoli; Luigi Zoli, and Giuseppe Fini, all of via della Foscherara, 29 Bologna, Italy

Filed March 5, 1971, Ser. No. 121,290

Claims priority, application Italy, March 9, 1970, 3361 A/70

Int. Cl. G04b *19/33*

U.S. Cl. 58—43 **1 Claim**



A timepiece for showing the time in different time zones which comprises a dial with a plurality of apertures which has under it a disc having the numbers or hours of the different time zones arranged at positions along a circle corresponding to the positions of the said apertures and suitable operating elements to rotate said disc by one step corresponding to 1 hour of the rotation of the minute hand.

3,702,057
PROCESS FOR CONTROL AND REGULATION OF DOUBLE PISTON-DRIVEN ENGINE WITH HYDROSTATIC MOTION TRANSDUCERS

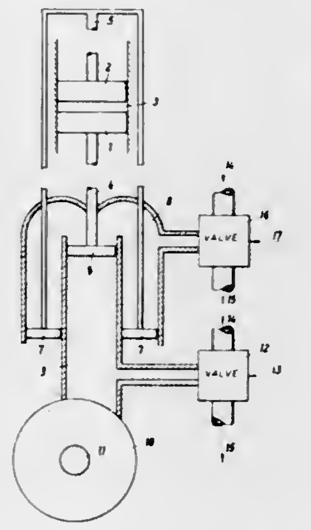
Wolfgang Rabiger, Buckenhofen, Germany, assignor to Grundig E.M.V., Kurgartenstrasse, Germany

Filed Dec. 14, 1970, Ser. No. 97,786

Claims priority, application Germany, Dec. 23, 1969, P 19 64 455.4

Int. Cl. F02b *41/00*

U.S. Cl. 60—19 **26 Claims**



A system for controlling the relative positions of the two pistons in double or opposed piston engines having hydrostatic motion transducers for transmitting the piston energy to a driveshaft. The control is effected by adding fluid to or withdrawing fluid from the transducers. The system includes means for comparing the positions of the two pistons and the angle of rotation of the driveshaft to generate two synchronous error signals, and means for comparing the actual dead points of said two pistons and the predetermined nominal dead points of each piston to generate first and second dead point error signals, and for relating the first dead point error signal to the second dead point error signal. Fluid is added to or withdrawn from the hydrostatic motion transducers in accordance with the synchronous error signals when the engine speed is below a selected engine speed, and in accordance with a dead point error signal when said engine speed exceeds a predetermined speed. In the system, control of both pistons is simultaneously switched from the synchronous error signal to the dead point error signal and vice versa.

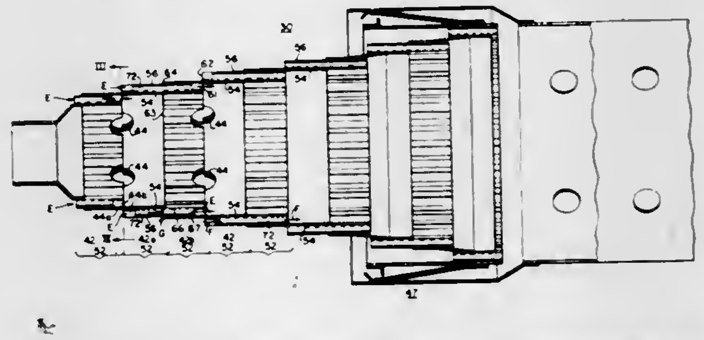
3,702,058
DOUBLE WALL COMBUSTION CHAMBER

Serafino M. De Corso, Media, and Carl W. Carlson, Holmes, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 13, 1971, Ser. No. 106,041

Int. Cl. F02g *3/00*

U.S. Cl. 60—39.65 **20 Claims**



A combustion chamber for a gas turbine power plant of the step-liner type including a plurality of annular double wall step-liner portions. The portions are of various sizes and are arranged concentrically and in order of increasing size from the upstream end toward the downstream end of the chamber. Each double wall liner portion includes an alternating smooth wall member and a serpentinous wall member. In one step, the smooth wall member is the radially inner wall and an overlapping portion of the serpentinous wall member is the radially outer wall. In the adjacent larger step, the serpentinous wall member is the radially inner wall and an overlapping portion of a larger diameter smooth wall member is the radially outer wall. The effect of this construction is to provide a combustion chamber capable of withstanding higher burning temperatures.

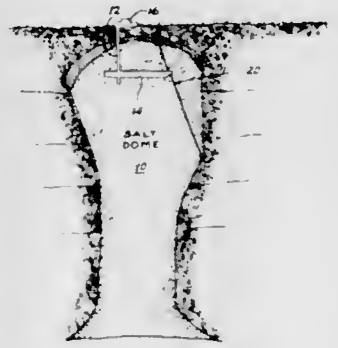
3,702,059
GROUTING FISSURES IN UNDERGROUND ROCK SALT DEPOSITS

Charles H. Jacoby, Dalton, Pa., assignor to International Salt Company, Clarks Summit, Pa.

Filed Oct. 13, 1971, Ser. No. 188,906

Int. Cl. E02d *19/16*

U.S. Cl. 61—35 **6 Claims**



There is disclosed an improved method for grouting (sealing) a ground water conducting fault zone, fissure, or the like, such as has been inadvertently intersected when mining an underground salt deposit.

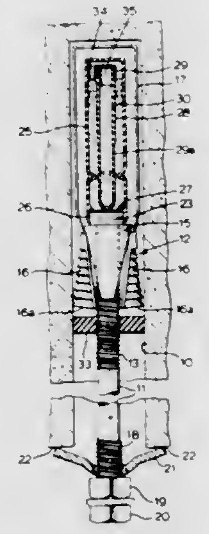
3,702,060
RESIN-BONDED EXPANSION SHELL

James Deans Cumming, Havelock, Ontario, Canada

Filed Feb. 25, 1971, Ser. No. 118,843

Int. Cl. E21d *20/02*

U.S. Cl. 61—45 B **14 Claims**



A resin reinforced anchor for a rock bolt consists of an expansion shell of a known type modified to mount a resin container. The resin container carries a resin and a hardener-containing capsule therein in such a way that actuation of the expansion shell breaks the hardener-containing capsule, mixes its contents and the contents of the container, and releases the mixed contents, to adhere the expansion shell to the sides of a drill hole.

3,702,061

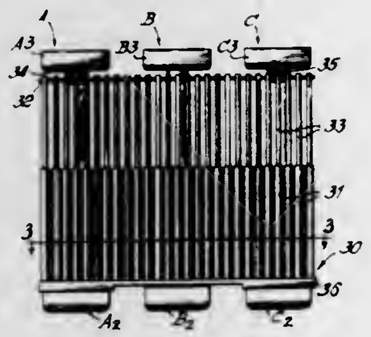
HYDRAULIC SUPPORT SYSTEMS FOR MINE WORKINGS

Max Kuhn, Bochum-Langendreer; Gunter Bell, Horneburg, and Willy Watermann, Dortmund-Berghofen, all of Germany, assignors to Klockner-Werke AG, Duisburg, Germany

Division of Ser. No. 4,930, Jan. 20, 1970, Pat. No. 3,618,325. This application Sept. 20, 1971, Ser. No. 181,763

Int. Cl. E21d *15/44*

U.S. Cl. 61—45 D **3 Claims**



A three frame assembly for an advancing roof support, each frame having a pit prop and a roof engaging cap. A shield in the form of suspended telescoping pipes is common to the three frames and is secured to the two outer frames for movement with the same. The shield prevents packing material from entering between the frames and is contoured for this purpose. The center frame may advance and subsequently the two end frames together with the shield advances. The roof engaging cap for each frame inclines downwardly at an angle generally parallel to the angle of rest of the packing material.

3,702,062

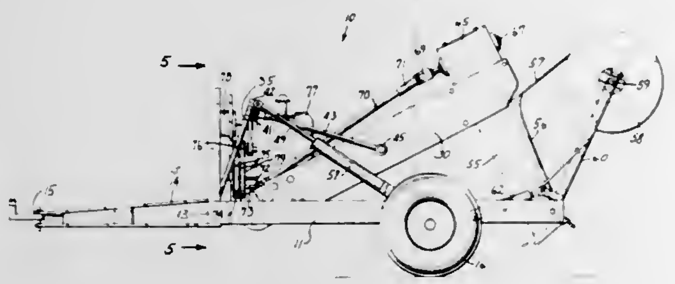
MOBILE VIBRATORY CABLE PLOW

Walter C. Olson, Box 356, Baudette, Minn.

Filed Sept. 9, 1970, Ser. No. 70,814

Int. Cl. E02f *5/02;* **A01b** *3/64, 35/00*

U.S. Cl. 61—72.6 **6 Claims**



A mobile trailer having a pair of rearwardly extending, spaced apart arms pivotally attached thereto with an elongated plow blade affixed therebetween in a downwardly extending position. An eccentric-type vibrator is also mounted between the arms for rotation about an axis parallel with the arms to vibrate the plow blade in a direction transverse to the direction of movement of the trailer and blade. The trailer further has means for mounting a spool of conduit and a channel is formed along the trailing edge of the plow blade for positioning the conduit at the bottom of a trench formed by the plow blade.

3,702,063

REFRIGERATION CYCLE FOR THE ALIQUEFACTION OF NATURAL GAS

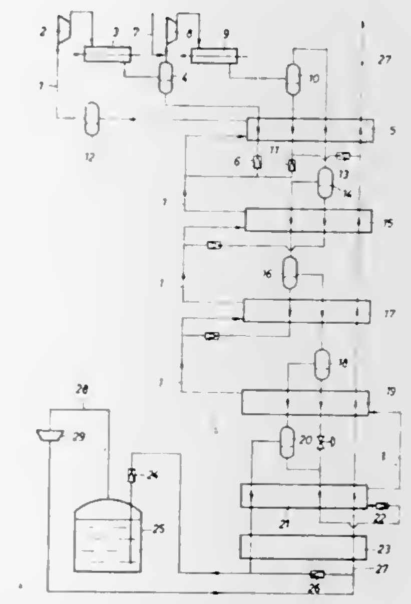
Volker Etzbach, Munich, and Wolfgang Forg, Grunwald, both of Germany, assignors to Linde Aktiengesellschaft, Hollriegelskreuth, Germany

Filed Nov. 4, 1969, Ser. No. 873,964

Claims priority, application Germany, Nov. 4, 1968, P 18 06 879.6

Int. Cl. F25j *1/00, 5/00, 1/02*

U.S. Cl. 62—23 **17 Claims**



In the liquefaction of natural gas wherein the refrigeration cycle fluid contains natural gas components, and such components are subjected to fractional condensation to obtain different temperature levels of refrigeration, the system is improved by adjusting the C_3–C_6 content of cycle fluid and the pressure of at least one intermediate pressure stage of the circulation pressure in such a manner that condensate is formed in the corresponding intercooler of said pressure stage. This condensate is then separated and subjected to heat exchange to utilize its refrigeration values and recirculated to the circulation compressor via an expansion valve. In this way, a substantial concentration of heavy hydrocarbons can be utilized to increase the refrigeration capacity of the refrigeration cycle, but said hydrocarbons do not deleteriously affect the lower temperature levels of refrigeration.

3,702,064

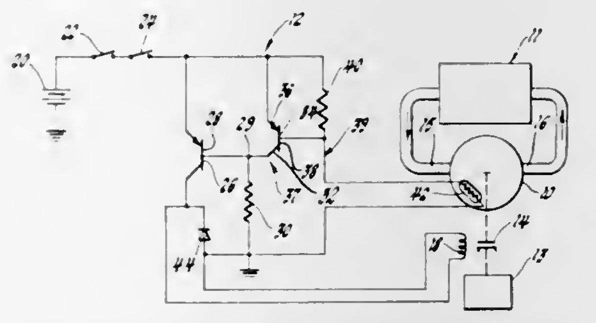
AIR CONDITIONING PUMP SHUTOFF

Henry J. Ciolli, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 5, 1071, Ser. No. 169,299

Int. Cl. F25b *27/00*

U.S. Cl. 62—158 **3 Claims**



Apparatus for automatically rendering a vehicle air conditioning system inoperable when the system coolant falls below a certain level. An avalanche thermistor in the air conditioner pump is immersed in the coolant as long as the coolant is above the certain level. When the coolant falls below the certain level it no longer cools the thermistor, which then changes from a high resistance to a low resistance. The decrease in thermistor resistance causes deenergization of a clutch coil that must be energized for the pump to be operable. In alternative embodiments the clutch coil is also prevented from being energized when the vehicle engine is inoperative.

3,702,065

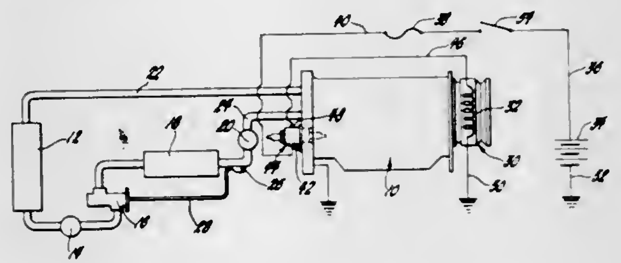
AUTOMOBILE AIR CONDITIONING COMPRESSOR SUPERHEAT SAFETY AND AMBIENT SWITCH

James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 6, 1971, Ser. No. 169,775

Int. Cl. F25b *27/00*

U.S. Cl. 62—158 **2 Claims**



In preferred form, a combination ambient temperature sensing switch and refrigerant superheat temperature responsive switch for an automobile air conditioning system having an electromagnetic clutch for transmitting engine rotation to a refrigerant compressor. The ambient temperature sensing portion of the switch is connected between the automobile battery and the coil of the clutch for energizing the coil whenever ambient temperatures are above a predetermined level. The refrigerant temperature responsive portion of the switch is connected between the battery and a fuse in short-circuit relation to the clutch coil to cause the fuse to blow in response to a predetermined maximum refrigerant temperature which closes the switch. A thermistor in circuit with the refrigerant temperature responsive switch delays the short circuiting of the clutch coil to prevent immediate blowing the the fuse.

3,702,066

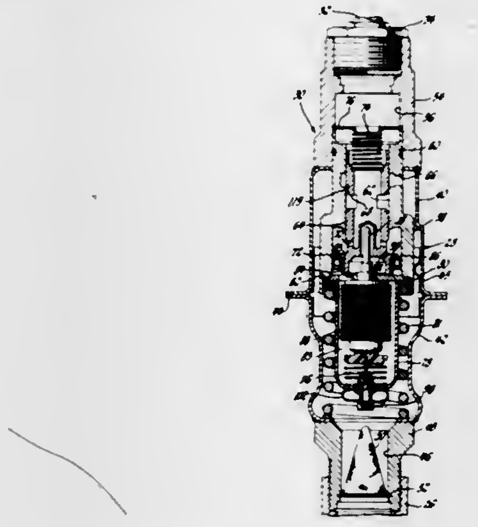
AUTOMATIC EXPANSION VALVE, IN LINE, PILOTED

Paul K. Beatenbough, Medina, and Carl A. Scherer, Clarence Center, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed July 22, 1971, Ser. No. 165,194

Int. Cl. F25b *41/04*

U.S. Cl. 62—222 **3 Claims**



Refrigerating apparatus for an automotive air conditioning system including a pressure responsive expansion valve between the condenser and the evaporator. Movement of a piston valve which is reciprocal within a valve housing controls the flow of refrigerant into the evaporator. Evaporator inlet pressure acts against one end of the piston and a control pressure established by a pilot valve and passage from the condenser outlet acts against an opposite end of the piston to regulate the pressure in the evaporator. An expandable bellows enclosure within a control pressure enclosure moves to open and close the pilot valve passage which produces a relatively constant control pressure.

3,702,067

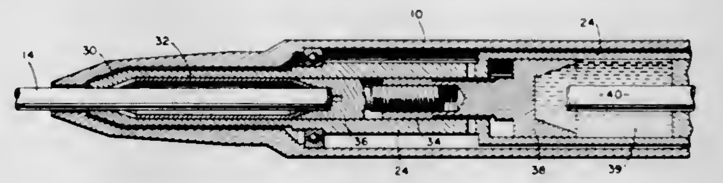
FORCE TRANSMISSION AND APPARATUS

James M. Stewart, West Palm Beach, Fla., assignor to Stewart Research, Inc., West Palm Beach, Fla.

Filed Nov. 4, 1969, Ser. No. 873,976

Int. Cl. F16d *3/00*

U.S. Cl. 64—27 **2 Claims**



The disclosure hereinafter set forth relates to force transmission in any environment. As an essential element in the working force system a substantially noncompressible, nonfluid, but readily deformable gel is employed. In such force transmission, the gel is deformed within a confining but variable zone, and the resulting thrust is translated to force receiving means. The disclosure has wide application and the specific illustration relates to dental and/or surgical type power operated handpieces.

3,702,068

KNITTING METHOD

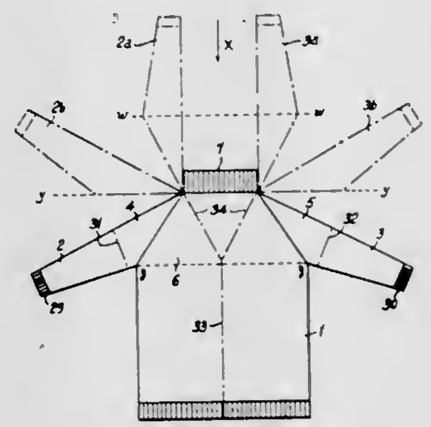
Max William Betts, Coventry, and Frank Robinson, Borrowash, both of England, assignors to Courtland Limited, London, England

Continuation-in-part of Ser. No. 842,506, July 17, 1969, abandoned. This application June 18, 1971, Ser. No. 154,673

Claims priority, application Great Britain, July 22, 1968, 34,853/68

Int. Cl. A41b *9/06*

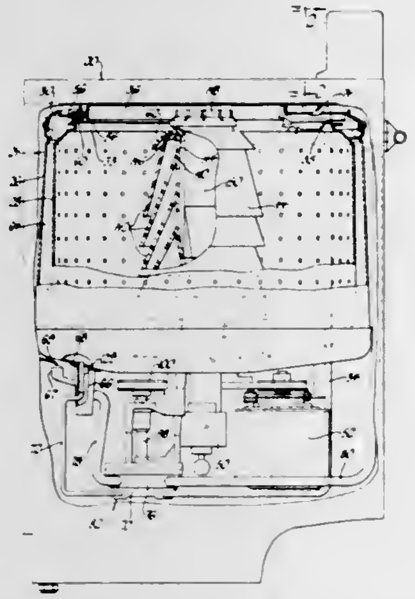
U.S. Cl. 66—176 **10 Claims**



A method of knitting a sleeved garment on a knitting machine, the method including the steps of knitting a first fabric portion constituted by shoulder portions of the sleeves in reciprocatory manner on both beds of a pair of opposed beds of a knitting machine such that pieces of each shoulder portion on the two beds are joined together at the edge of the sleeve which is innermost on the machine, and knitting a second fabric portion constituted by front and rear upper body portions of the garment as flat fabric on the pair of opposed beds, making needles progressively inactive in an inwards direction from both ends of the needle beds during knitting of one of said first and second fabric portions and bringing the inactive needles progressively back into action in the opposite direction during knitting of the other fabric portion whereby the first and second fabric portions are shaped and joined to one another, the remaining sleeve and body portions being knitted as tubular fabrics integral with said shoulder portions of said sleeves and said upper body portions of the garment respectively.

3,702,069
APPARATUS FOR SANITIZING A DOMESTIC CLOTHES WASHER

Verlos G. Sharpe, Northfield, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed July 1, 1971, Ser. No. 158,681
Int. Cl. D06f *39/02, 39/08*
U.S. Cl. 68—12 R **3 Claims**

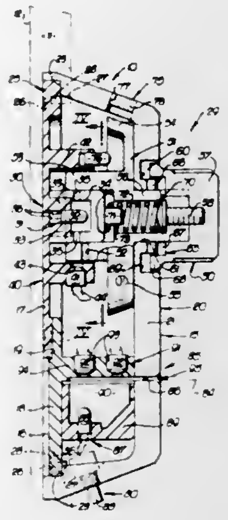


A method and apparatus for sanitizing domestic clothes washer wherein a predetermined concentration of liquid sanitizing solution is first distributed throughout the washer and the washer's water recirculation system, then removed from the washer but retained in the water recirculation system.

3,702,070
SEQUENTIAL SIGNAL PRODUCING MEANS

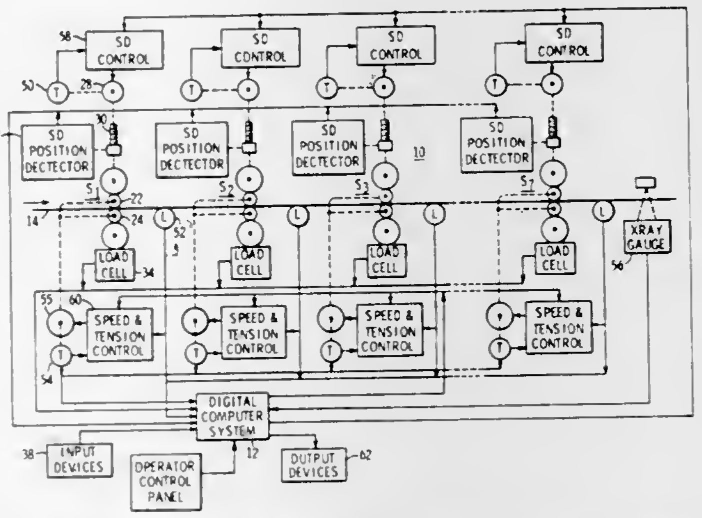
Klaus W. Gartner, Palos Verdes Peninsula, Calif., assignor to Peter Phillips, Gardena, Calif., a part interest
Filed Feb. 19, 1971, Ser. No. 116,909
Int. Cl. E05b *47/00*
U.S. Cl. 70—278 **20 Claims**

The means has a housing with a cover and mating two portion back wall, with one portion mounting a light and a plurality of photo-electric cells, each in a distinct position around the light, with a dial member rotatably and slidably mounted to the housing, extending between the light and photo-electric cells to block the passage of light therebetween except through a single port in the dial member which is rotatable to each distinct portion and slidable into and out of alignment with the light and a respective cell to product a sequential signal, and with the other portion mounting a light centrally located in a reflector member to direct the light rays to each of a plurality of photo-electric cells, with a patterned card being insertable between the reflector member and cells to pass light, only to preselected cells to produce the sequential signal, with such signal from either portion being sent to a means discriminately receiving a sequential signal. Mating ratchet teeth may be provided on the housing and dial member to insure the positioning of the port in a distinct position, to prevent rotation in the aligned position, and to cam the dial to the non-aligned position upon attempted rotation in the aligned position. Each portion of the back wall may be mounted to a separate cover to provide only the combination portion or card portion of the means.



3,702,071
GAUGE CONTROL METHOD AND APPARATUS FOR METAL ROLLING MILLS

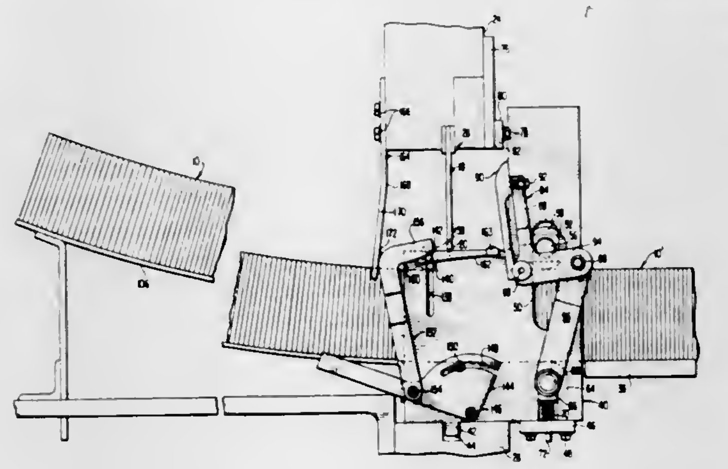
Edward J. Masar, Irwin, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 14, 1970, Ser. No. 80,683
Int. Cl. B21b *37/08*
U.S. Cl. 72—8 **14 Claims**



A programmed digital computer control system provides an on-line roll force gauge control for a multiple stand tandem hot metal strip rolling mill, A gauge control program calculates the workpiece strip delivery gauge or thickness related force error from at least one stand of the rolling mill and compares this calculated delivery gauge related force error with a desired or reference delivery gauge related limit force error for the same stand to establish a delivery gauge error related force error. The gauge control program then determines in relation to the magnitude of this force error representation of the delivery gauge error for the same one stand that this force error is to be corrected by adjustment of the operation of that same one stand or is to be fed forward in the direction of the workpiece strip movement to determine the correction in a succeeding stand of the rolling mill by adjustment of the operation of the succeeding stand. This force error is effective to adjust the latter stand operation for a time interval related to the movement of the workpiece or workpiece strip portion where this force error is measured between those respective stands of the rolling mill.

3,702,072
APPARATUS FOR CONTOURING A HONEYCOMB CORE

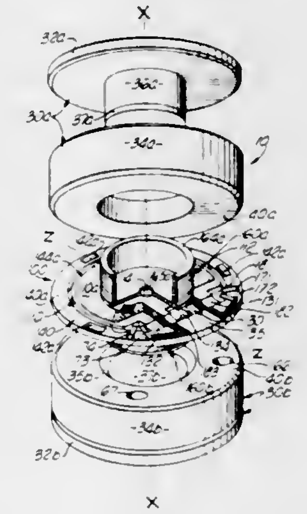
John E. Broderick, Orchard Beach, Md., assignor to Martin Marietta Corporation, New York, N.Y.
Filed May 18, 1970, Ser. No. 38,460
Int. Cl. B21d *11/00*
U.S. Cl. 72—307 **14 Claims**



A reciprocating ram carries a plurality of spaced, downwardly projecting prongs which enter a transversely aligned row of honeycomb core cells, deforming the cells from one end to cause the honeycomb core to curve in concave fashion toward the prongs. The honeycomb core billet is released when the prongs are fully inserted to allow self-realignment prior to incrementing the billet to bring the next alternate row of cells into prong receiving position. Pawl and ratchet feed means and a releasable hold down bar operate cyclicly to facilitate production of the curvature.

3,702,073
ACCELEROMETER

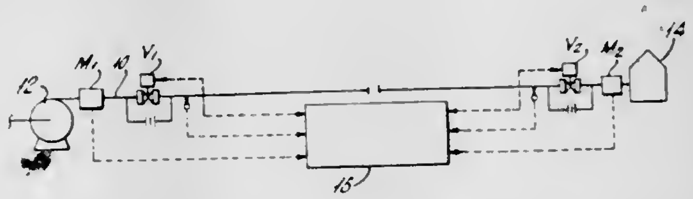
Earl D. Jacobs, Tustin, Calif., assignor to Sundstrand Data Control, Inc.
Filed Feb. 28, 1969, Ser. No. 803,208
Int. Cl. G01p *15/08*
U.S. Cl. 73—517 **8 Claims**



An accelerometer is provided for detecting acceleration which employs a flapper ring clamped at raised points between upper and lower portions of a magnet structure. The flapper is suspended by a bifilar hinge on the ring between two permanent magnets. Coils are mounted on opposite sides of the flapper, each encircling one of the permanent magnets and separated therefrom by an air gap. Each side of the flapper has a metallic coating thereby forming a capacitor with an inner face of the magnet structure on each side of the flapper. As the accelerometer is accelerated, the flapper is displaced relative to the magnet structure thus increasing the capacitance of one capacitor and decreasing the capacitance of the other capacitor. Electrical signals proportional to the change in the capacitances, and therefore proportional to the acceleration, are fed through a servo loop to the coil which set up a magnetic field which interacts with the magnetic fields of the permanent magnets to oppose the displacement of the flapper.

3,702,074
PIPE LINE LEAK DETECTION AND LOCATION SYSTEM

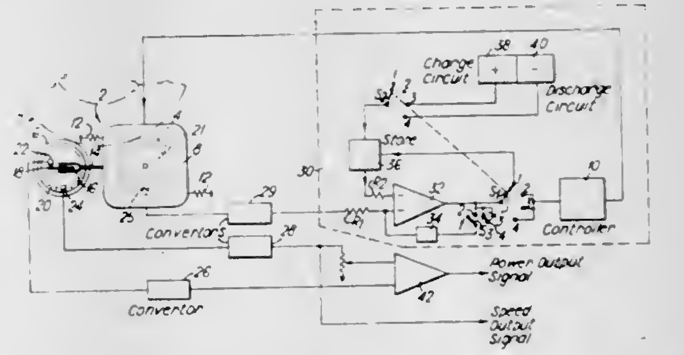
John S. Mullen, Florham Park, N.J., assignor to Esso Research and Engineering Company
Filed Aug. 19, 1971, Ser. No. 173,113
Int. Cl. G01m *3/02, 3/28*
U.S. Cl. 73—40.5 R **7 Claims**



A pipe line leak detection and location system including means for raising and lowering the pressure in a flowing pipe line, and metering the flow at the inlet and outlet of the pipe line at the different pressure levels, thus enabling pipe line leaks of very small magnitude to be detected. By determining the increase in the rate of a leak at high pressure over that obtained at low pressure, pipe line leaks can be detected. Block valves paralleled by orifices, or control valves, located at spaced intervals along the pipe line permit the raising and lowering of the pressure in selected segments of the pipe line, and allow the particular location of the leak also to be determined. When a leak is present the different between the inflow and outflow readings will be greater at the higher pressure than at the lower pressure and when there is no leak present, the difference between these readings well be the same at the high pressure and the low pressure. Electronic control means are provided to receive pressure and flow responsive signals from the pipe line and transmit these signals to further control equipment connected with the pipe line for controlling pressure and flow thereof.

3,702,075
VEHICLE TESTING APPARATUS

John Anthony Marten, Holt, and Bernard Arthur Gene, Marham, both of England, assignors to Suntester Limited, Norfolk, England
Filed March 29, 1971, Ser. No. 128,994
Claims priority, application Great Britain, March 31, 1970, 15,224/70
Int. Cl. G01l *5/13*
U.S. Cl. 73—117 **4 Claims**



The disclosure describes a chassis dynamometer in combination with control means comprising an amplifier, respective inputs of which are fed to a speed signal dependent on the speed of rotation of the rollers of the dynamometer and to a reference signal. The output of the amplifier is selectively fed either to means controlling the braking torque of the dynamometer, the arrangement being such that a negative feed back loop is completed, or alternatively to the input of a store, from the output of which the reference signal is derived, so as to maintain the reference signal at a value corresponding to the speed of rotation of the rollers.

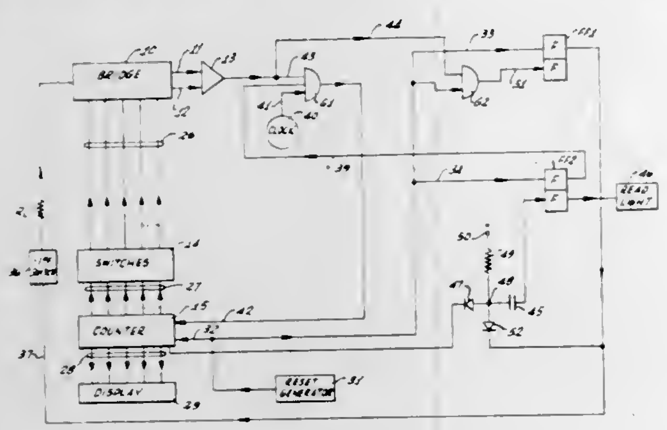
3,702,076
ELECTRONIC THERMOMETER

Heinz W. Georgi, La Jolla, Calif., assignor to Ivac Corporation, San Diego, Calif.

Filed June 15, 1970, Ser. No. 45,990

Int. Cl. G01k *7/24*

U.S. Cl. 73—362 AR **34 Claims**



Electronic apparatus for measuring temperatures by means of a thermistor in one arm of a Wheatstone bridge, bridge balance being accomplished by a plurality of shunt resistances selectively inserted into the balancing arm of the bridge by counter controlled switching, the counter state being altered by gated clock pulses to provide a digital indication of measured temperature. Anticipation circuitry is provided for correlating the time between counter clock pulses with the time vs. temperature characteristic of the thermistor to selectively alter bridge balance and counter state so as to provide an earlier indication of the anticipated temperature at which the thermistor will finally stabilize.

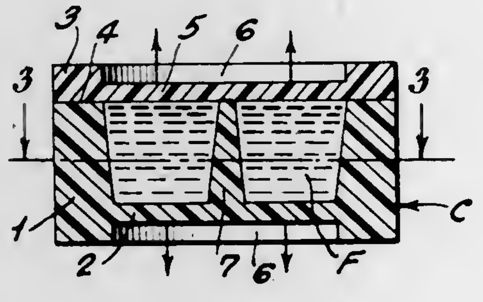
3,702,077
DEFROST EVINCING DEVICES

Bela G. Szabo, 5138 Delford St., Pittsburgh, Pa.

Filed Aug. 19, 1970, Ser. No. 64,986

Int. Cl. G01k *11/08*

U.S. Cl. 73—358 **16 Claims**



A defrost evincing device, which operates as a telltale temperature indicator for frozen packages or spaces maintained at low temperatures to indicate reliably the occurrence of even a transient thawing temperature which may have been followed by a re-freezing cycle. Such telltale indicating assemblies have been included for this purpose in frozen food packages and the like, and these generally comprise a capsule filled with a colored liquid such as colored water, which capsule ruptures upon the initial freezing of the package, leaving free the frozen coloring fluid for eventual flow upon the thawing of the frozen package. When this occurs, the flowing liquid may permeate an absorbent piece of paper or the like disposed in proximity to the capsule, which imparts distinctive color to the absorbent indicator, which is permanent and irreversible, to constitute evidence of the package having gone through at least one thawing cycle even if it was re-frozen subsequently. The instant invention aims to provide a rugged container for the colored fluid capable of sustaining heavy loads so that the same is fractured only upon freezing of the container rather than by any weight loadings to which the same may be subjected. Thereby assurance is had that when the absorbent indicator becomes distinctively colored, it is the result of the flow of the colored fluid upon the thawing of the frozen package, and not as a result of the fracture of the container in its initial state by the loadings imposed thereon. To ensure the fracture of the container by the expansive force of the freezing fluids, at least one of the walls thereof is of thinner cross-section than the load-bearing walls. Furthermore, a tension member is provided in the container, acting against the frangible wall, to assure an adequate fissure in the ruptured receptacle through which the colored fluid may flow towards the absorbent indicator.

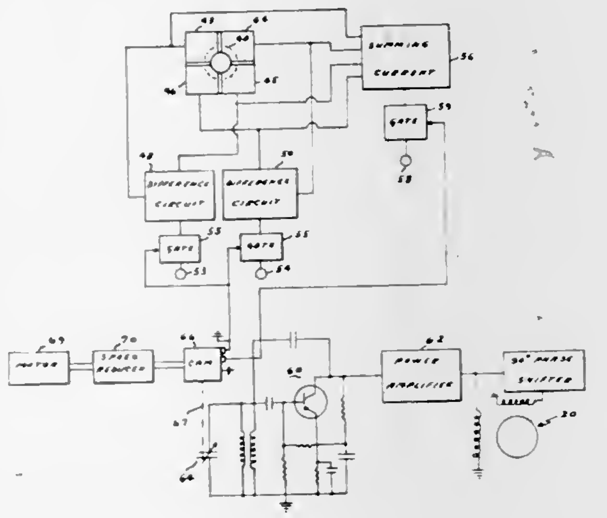
3,702,078
DYNAMICALLY STABILIZED ACCELEROMETER AND RATE GYRO DEVICE

George E. Knausenberger, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Nov. 22, 1971, Ser. No. 201,079

Int. Cl. G01p *9/00;* **G01c** *19/28*

U.S. Cl. 73—504 **4 Claims**



A gyroscopic device having a rotor, supported in a liquid within a chamber, with the speed of the chamber being changed cyclically by varying the speed of a synchronous motor. The speed of the synchronous motor is changed by varying the output frequency of an oscillator which drives the motor through a power amplifier. Rate gyro information and acceleration information by means of a photoelectric pickup device with the change of position of the illumination spot being used to provide a pair of rate signals in a pair of difference circuits. A change in spot size is used to provide an acceleration signal in the output of a summing circuit. Gates in the output of the difference circuits and summing circuits are operated by the same cam that controls motor speed to close the gates during different portions of the speed change cycle.

3,702,079
APPARATUS FOR THE FORMATION OF OUTPUT SIGNALS FROM GYROSCOPES

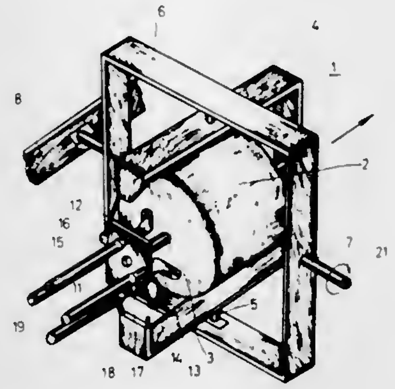
Walter Kranz, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Ottobrunn near Munich, Germany

Filed Sept. 16, 1970, Ser. No. 72,639

Claims priority, application Germany, Oct. 10, 1969, P 19 51 087.3

Int. Cl. G01c *19/28*

U.S. Cl. 74—5.6 **9 Claims**



A gyroscope is supported in three gimbals pivotal about mutually perpendicular axes which are perpendicular to an axis of rotation of the gyroscope rotor. The gyroscope rotor is rotatably mounted in a rotor frame constituting the inner gimbal, and the outer gimbal is secured to the fuselage of an airborne vehicle. A planar diaphragm is secured to the rotor frame. Four jet nozzles discharge fluid streams into respective collector nozzles axially aligned therewith, the four jet nozzles being arranged at the corners of a square which is standing on one corner. The planar diaphragm normally interrupts the flow of air from the jet nozzles to the collector nozzles. Each pair of collector nozzles is connected to respective control inputs of a flow amplifier which inputs are also connected to the output channels of a flow oscillator providing sawtooth output pulses. The amplifier provides pulse-width modulated output signals corresponding to deflections of the fuselage about a pitch axis, a yaw axis, or both.

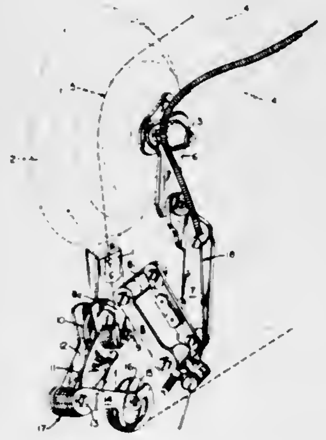
3,702,080
CYCLE GEAR CHANGE AND CYCLES EQUIPPED WITH SUCH GEAR CHANGE

Jacques Andre Huret, and Roger Henri Huret, both of 60, Avenue Felix Faure, (Hauts de Seine) Nanterre, France

Filed Feb. 19, 1971, Ser. No. 117,009

Int. Cl. F16h *11/04, 7/10*

U.S. Cl. 74—217 B **3 Claims**



A cycle gear change enabling the cycle drive chain to pass from one free wheel pinion to another, these pinions having a relatively large difference in the number of teeth in order to obtain a large speed variation for the moving cycle, this gear change being fitted with a roller which may be displaced crosswise to a cycle free wheel so as to ensure cross-wise displacement of the chain and its passage from one free wheel pinion to the other, and a second roller articulated in relation to the first so as to keep the drive chain under tension, gear change characterized by the fact that it comprises a guide pivoting freely on a spindle and straddling the portion of chain situated between the free wheel and the first roller. May be applied to all cycles.

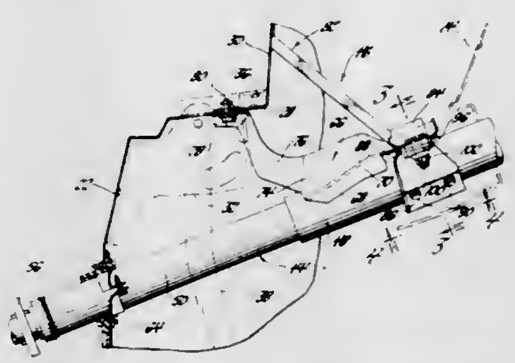
3,702,081
STEERING COLUMN ASSEMBLY

Gary L. Arnston, Lansing, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 20, 1971, Ser. No. 173,493

Int. Cl. B62d *1/18*

U.S. Cl. 74—492 **2 Claims**



An automobile steering column assembly wherein an axially movable columnar member of a collapsible energy absorbing column structure has secured thereto a bracket having lugs thereon which lugs are releasably fastened to a combination guide and support member rigidly mounted on the vehicle body remote from the instrument panel structure of the latter. Under impact loading on the column structure the lugs are released for sliding movement relative to the combination member, the latter having a bearing surface and restraining flanges which constrain the bracket and lugs to move in a predetermined path of motion during collapse of the column structure to maintain the latter in an attitude effecting optimum energy absorbing performance.

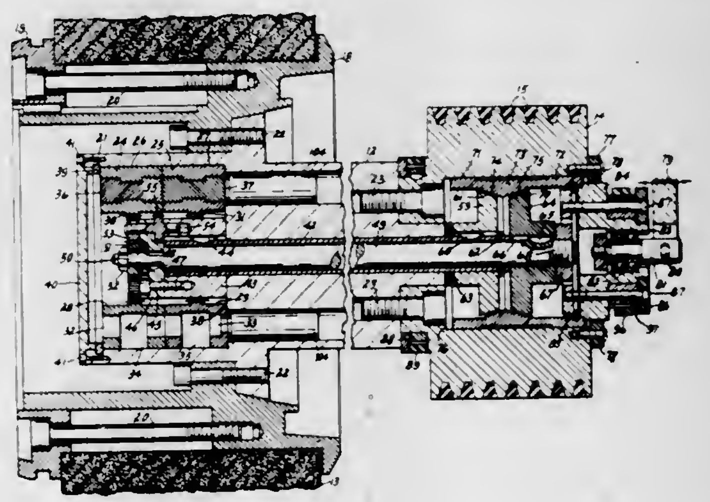
3,702,082
BALANCING DEVICE FOR ROTATING MEMBERS

Jacob Decker, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Nov. 13, 1969, Ser. No. 876,308

Int. Cl. F16f *15/00*

U.S. Cl. 74—573 **10 Claims**



A device for balancing rotating members positioned on a rotatable shaft or spindle. A pair of movable balance weights are positioned within the shaft or spindle and are movable both with respect to each other and in unison about the axis of rotation of the rotating mass. The device includes means for moving the balance weights while the structure within which they are housed is rotating.

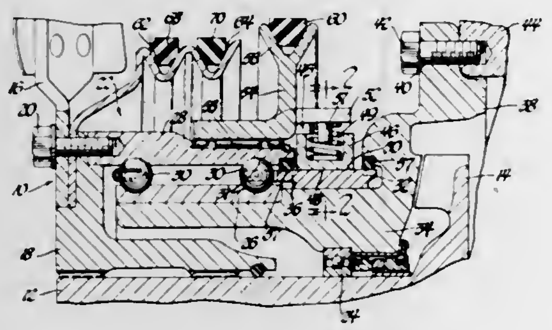
3,702,083
TRANSMISSION

Lubomyr O. Hewko, Port Clinton, and Richard K. Kepple, Huron, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed July 14, 1971, Ser. No. 162,593

Int. Cl. F16h *5/42*

U.S. Cl. 74—752 E **10 Claims**



These two-speed accessory drive transmissions have spring-loaded centrifugal weights and a planetary friction unit including inner and outer ring members and intermediate ball planets. In one embodiment, the centrifugal weights are urged into frictional drive contact with the planetary carrier during low engine speeds for driving various engine accessories operatively connected to the outer ring member in overdrive. A one-way clutch is located between and connects the input pulley hub and the outer ring member upon disengagement of the centrifugal weights from the carrier under the action of centrifugal force. In an alternate embodiment, the inner ring member is connected to drive accessories, and the outer ring member is the reaction member. The centrifugal weights are remotely connected to drive the carrier via a connector member extending past the outer ring member of the planetary unit.

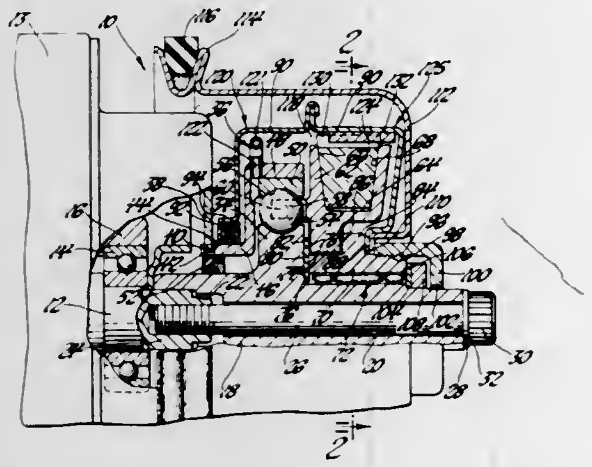
3,702,084
TRANSMISSION

Richard K. Kepple, Huron; Lubomyr O. Hewko, Port Clinton, and Arden W. Rogers, Marblehead, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed July 14, 1971, Ser. No. 162,592

Int. Cl. F16h *5/42*

U.S. Cl. 74—752 E **14 Claims**



The illustrated two-speed accessory drive transmissions include wedge-shaped centrifugal weights and a planetary friction unit, with spring means for wedging the weights into frictional driving contact with clutching faces on the input means and/or the carrier of the planetary unit during low engine speeds for driving the output member in overdrive, and a one-way clutch for interconnecting the output and input in a direct drive relationship upon disengagement of the wedge-shaped weights from the carrier and/or input means clutching faces under the action of centrifugal force.

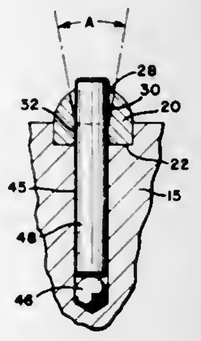
3,702,085
METHOD OF RIGIDLY SECURING MEMBERS WITH A RECESSED FASTENER

Hershel E. Hicok, 4636 Pine Village Drive, Orchard Lake, Mich.

Filed May 14, 1970, Ser. No. 37,249

Int. Cl. B25b *13/30;* **B21d** *39/00*

U.S. Cl. 76—107 A **6 Claims**



An elongated strip of bead stock is secured to a sheet metal draw die by first punching longitudinally spaced tapered holes within the strip with a punch having a diameter substantially smaller than the opening within the punch die. The strip is shaped and inserted within a groove formed within the draw die, and a pin-like fastener is inserted through each tapered hole and into a correspondingly aligned blind bore formed within the draw die. The outer end of each fastener is peened so that it expands both within the bore adjacent a hardened ball placed within the bore, and also within the tapered hole to effect a rigid and positive connection between the bead stock and the forming die. A punch tapered hole and a recessed tapered head fastener are also disclosed for rigidly connecting other adjacent members.

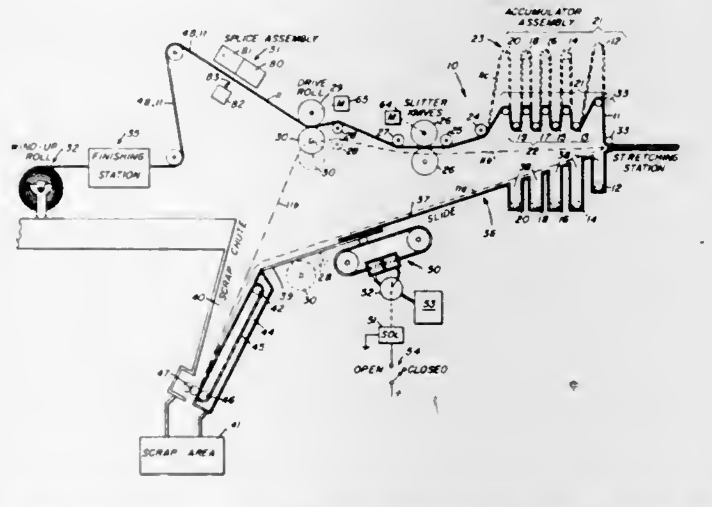
3,702,086
APPARATUS AND METHOD FOR HANDLING A WEB

Donald R. Moss, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 21, 1970, Ser. No. 99,885

Int. Cl. B26d *5/20*

U.S. Cl. 83—13 **10 Claims**



Apparatus and method for handling a plastic web during the manufacture thereof wherein after the web exits from a stretching station a slide is provided for diverting defective web material downward to a scrap handling area. When satisfactory material is thereafter produced the web may be automatically threaded into an accumulator assembly for take-up of the web so that the downstream end of the web may be stopped to permit the defective web material to be severed from the satisfactory web material. After being severed from the defective material the satisfactory material is spliced onto a web that has been previously threaded through to the finishing end of the apparatus where a wind-up roll is positioned for storage of the satisfactory web material.

The accumulator assembly comprises first and second sets of rollers wherein the first set is stationary and the second set is movable and positionable below the path of the defective web portion. The second set is movable from its lower position where it is nestable in recesses formed in the slide to allow the defective web to pass thereover, to a raised position where it is above the first set. The movement of the second set of rollers between the rollers of the first set is utilized to thread the web in a serpentine path between the rollers of the accumulator assembly.

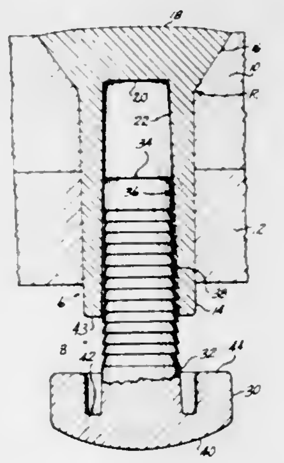
3,702,087
DOUBLE SHANK BOLT

Hubert A. Schmitt, Auburn, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed March 31, 1971, Ser. No. 129,773

Int. Cl. F16b *19/10*

U.S. Cl. 85—39 **1 Claim**



A high strength bolt type fastening system comprising an external member and an internal member which lockingly interengage within a hole passing through an overlapping pair of structural members upon application of longitudinal driving forces by standard riveting equipment. The external member is provided with a smooth conical recess having a taper of approximately .020 inch per inch to receive a matching solid conical stud portion of the internal member which has a serrated surface of correspondingly larger diameters than the recess to expand the external member and the hole and cause the serrations to lockingly engage the smooth wall of the recess to secure the joint.

3,702,088
DOUBLE SHANK BLIND BOLT

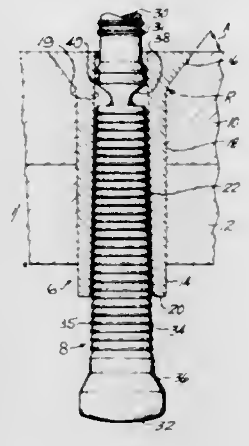
Hubert A. Schmitt, Auburn, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed March 31, 1971, Ser. No. 129,775

Int. Cl. F16b *10/19*

U.S. Cl. 85—77 **1 Claim**

A high strength blind bolt type radially expanding fastening system which may be completely installed from one side of the joint comprising an external 70° flush head sleeve member, and an internal conical pin member having a serrated surface with a break-off groove. The sleeve member is provided with a matching smooth conical inner wall having a taper of approximately 0.020 inch per inch and of correspondingly smaller diameter than that of the pin member. The oversized pin is inserted into the sleeve and the fastener assembly placed into a close tolerance hole from the flush side of the joint. Pulling and holding forces are applied to the pin and sleeve members respectively, and the pin is drawn into the sleeve; a serrated lead-in surface located ahead of the break-off groove acting to react a portion of the load required to expand the sleeve until the serrated lead-in surface and the break-off groove emerge from the flush end of the sleeve. The break-off groove is designed to fracture at a predetermined load sufficient to have expanded the sleeve approximately 0.005 inches thereby causing the serration notches to lockingly engage the smooth inner wall of the sleeve to secure the joint.



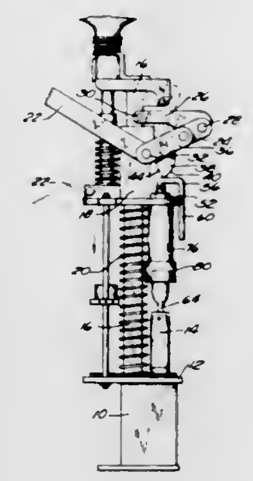
3,702,089
SHOTGUN SHELL RELOADER WITH SIZING DIE AND EJECTOR

Theodore J. Bachhuber, 725 Dayton St., Mayville, Wis.

Filed Jan. 27, 1971, Ser. No. 110,027

Int. Cl. F42b *33/04*

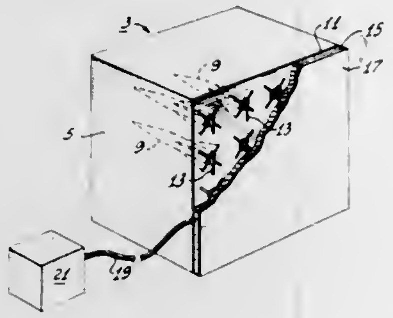
U.S. Cl. 86—32 **7 Claims**



The tool-supporting carriage of a reloader is actuated by a toggle lever system having one of its links provided with an ejector cam. The tools mounted on the carriage include a resizing die having a tubular support, and a relatively reciprocable depriming punch and ejector bolt having a U-shaped cam follower portion in the path of the cam, one leg of said portion projecting through the carriage interiorly of said support and another leg thereof being guided and supported by the carriage to resist a lateral component of cam thrust while providing prolonged cam action in the ejection from the sizing die of the re-sized cartridge.

3,702,090
SHEET IGNITER

Charles T. Hoard, Oakland, Calif., assignor to MB Associates, San Ramon, Calif.
Continuation of Ser. No. 103,289, April 17, 1961, abandoned. This application Feb. 5, 1965, Ser. No. 433,534
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.813 **3 Claims**

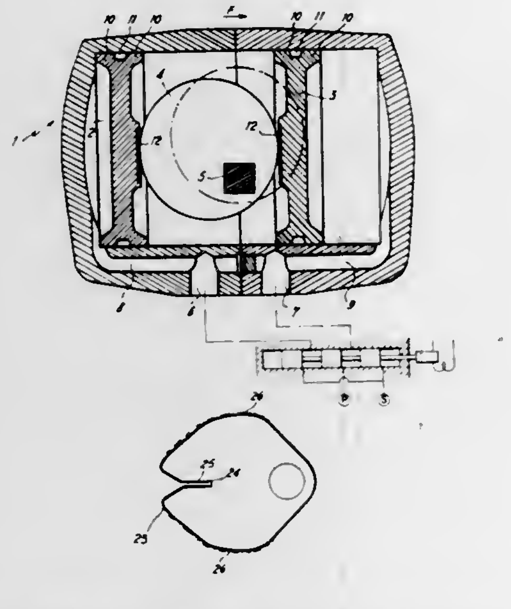


1. A holding, launching and ignition device for a plurality of miniature rockets comprising in combination:
   a. a block of foam plastic;
   b. a plurality of holes through said plastic, said holes extending from a front surface to a rear surface of the block;
   c. a miniature rocket having a nozzle at the aft end thereof in each of said holes:
   d. the aft end of each nozzle being substantially flush with the rear surface of the block;
   e. a fuse extending from each of the rocket nozzles and bent to lie flush on the surface of the block;
   f. a thin pyrotechnic layer spread over substantially the entire rear surface of the block;
   g. said pyrotechnic layer encompassing all of the rocket fuses; and
   h. means for igniting the pyrotechnic layer

3,702,091
VALVE ACTUATOR MEANS

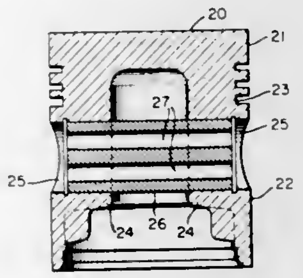
Jean Viaud, Paris, France, assignor to Societe Argenton and Societe Anonyme, Luxemburg, Luxembourg
Filed April 27, 1970, Ser. No. 32,121
Claims priority, application France, April 28, 1969, 6913427
Int. Cl. F01b *1/02*
U.S. Cl. 92—73 **1 Claim**

Improved fluid-operated valve actuator means for rotating a valve shaft in opposite directions through a given angle (preferably, 90° in the case of a quarter-turn valve). The invention is characterized by the provision of cam means connected with the output shaft and arranged in a chamber between a pair of freely movable operating pistons. When one end of the chamber is pressurized, the corresponding piston applies an operating force to the cam to rotate the cam and the output shaft through the given angle. In one embodiment, reversing valve means are provided for reversing the ends of the chamber that are pressurized and vented, respectively. In a second embodiment, one end of the chamber is alternately pressurized and vented, respectively, to achieve the desired rotation of the output shaft, the other end of the piston being enlarged to define a pressure fluid reservoir operable to return the output shaft to its initial position. In a third embodiment, spring means assist in returning the output shaft to its initial position.



3,702,092
PISTONS FOR ENGINES

Fred Zollner, Fort Wayne, Ind., assignor to Zollner Corporation, Fort Wayne, Ind.
Continuation of Ser. No. 850,819, Aug. 18, 1969, abandoned. This application May 3, 1971, Ser. No. 139,843
Int. Cl. F16j *1/14;* **F16c** *9/04*
U.S. Cl. 92—187 **6 Claims**

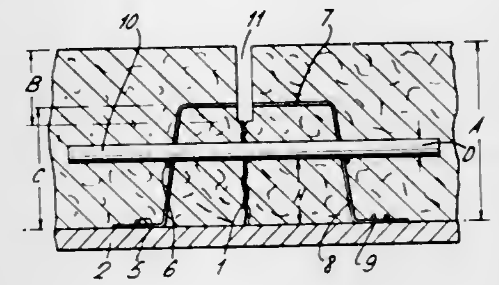


An engine piston with opposed piston pin bosses depending from the head of the piston and laterally spaced apart. A piston pin is secured within openings in the bosses, such openings being aligned transversely whereby the piston pin also is disposed transversely of the piston. The pin is formed with a plurality of eccentrically disposed holes of selected lengths extending longitudinally of the piston pin. Such holes are spaced predetermined distances apart and are arranged one above another while preferably occupying in whole less area than the solid area of the pin adjoining said holes. These holes in certain instances may be circular in shape and in number ranging for examples from two to six. In other instances the holes may be either rectilinear, oval or approximately triangular in shape and vary in number such for example as three or four thereof.

3,702,093
CONSTRUCTION OF CONCRETE ROAD WITH EXPANSION JOINTS

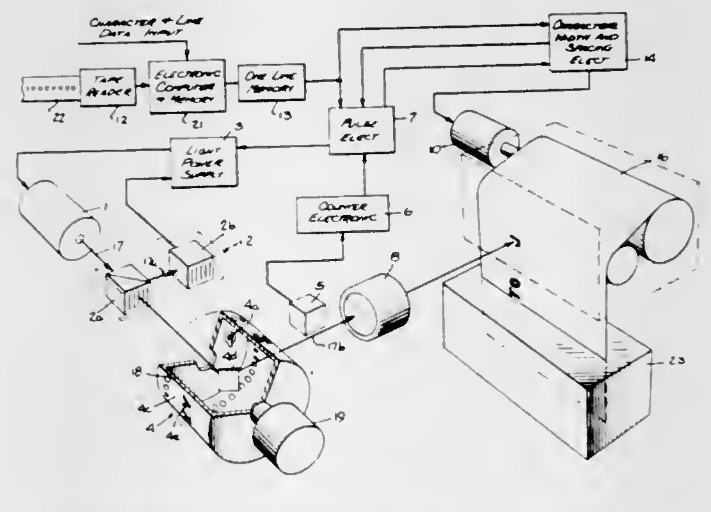
Guido Van de Loock, and Roeland Van Overbeke, both of Hemiksem, Belgium, assignors to S. A. Bekaert-Cockerill, Hemisken, Belgium
Filed April 2, 1971, Ser. No. 130,627
Claims priority, application Netherlands, April 3, 1970, 7004773
Int. Cl. E01c *7/00*
U.S. Cl. 94—8 **8 Claims**

A support apparatus for constructing a concrete road with expansion joints includes a plurality of like-oriented parallel-spaced inverted U-shaped cross members and at least one pair of support members connecting together the cross members with one of the support members being connected to each of the legs at an intermediate point on one side of the cross members and the other of the support members being connected to each of the opposite legs at an intermediate point on the opposite side of the cross members. In constructing a concrete road with expansion joints the support apparatus is first placed on a roadbed in general alignment with the desired location of a particular expansion joint, self-oiling dowel bars are secured adjacent the cross members with the dowel bars resting on the support members and being aligned generally with the longitudinal axis of the road, the concrete is poured for finishing the road, and a groove is then cut in the upper portion of the concrete, prior to the time when the concrete commences to shrink, to a depth sufficient to sever the central elements connecting the legs of the inverted U-shaped cross members but not to a depth sufficient to contact the dowel bars.



3,702,094
PHOTOGRAPHIC COMPOSITION SYSTEM

David J. Sinnott, Ringwood, and Donald E. Alecci, Pine Brook, both of N.J., assignors to Star-New Era, Inc., South Hackensack, N.J.
Filed Jan. 19, 1970, Ser. No. 3,718
Int. Cl. B41b *15/08*
U.S. Cl. 95—4.5 **5 Claims**

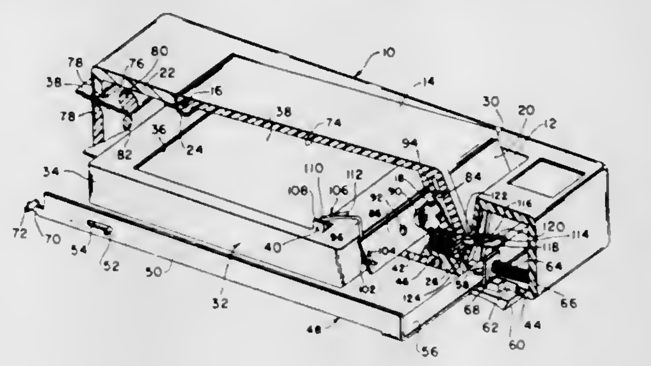

Character + Line Data Input
Character Width and Spacing Elect
14
22
12
3
13
7
Light Power Supply
6
23
19

A photographic composition system having a pulsed light source that projects a beam of light through a font of characters to produce an image which is cast onto a sheet of film that is advanced by motor means. The controls for activating the motor provide for correct spacing between successive characters and are connected to a memory system which receives data input.

3,702,095
AUTOMATIC ADJUSTMENT OF AN EXPOSURE REGULATING DEVICE IN A COLLAPSIBLE CAMERA

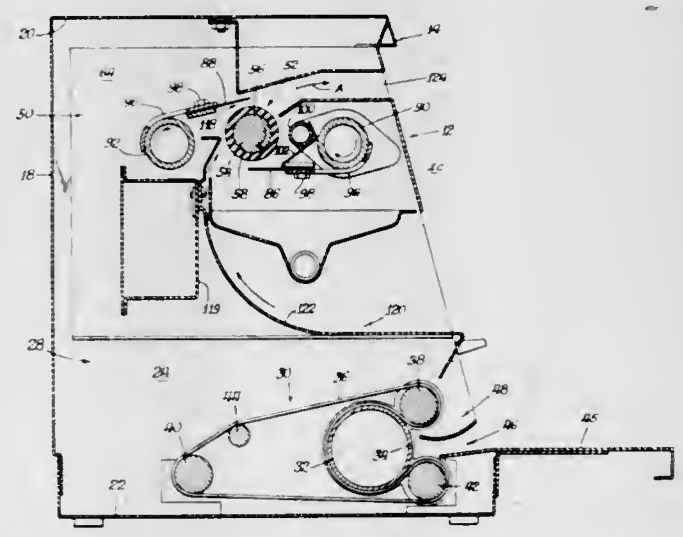
Guilford Edwin Kindig, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 22, 1972, Ser. No. 227,983
Int. Cl. G03b *17/04, 9/02*
U.S. Cl. 95—11 R **8 Claims**

A collapsible camera having an adjustable exposure regulating device incorporated in its movable shutter assembly is loaded with a film container having coding means representing a characteristic of film therein. When the camera is collapsed, a code sensing element of the shutter assembly is located adjacent to the film container and is influenced by the coding means to adjust the exposure regulating device. Means are provided to require collapsing of the camera whenever the film container is replaced to ensure that the exposure regulating device is adjusted by the coding means of the new film container.



3,702,096
COPY APPARATUS

John S. Copeland, Buffalo Grove, Ill., assignor to Addressograph-Multigraph Corporation, Mt. Prospect, Ill.
Filed July 8, 1971, Ser. No. 160,618
Int. Cl. G03d *3/00;* **G03b** *27/30*
U.S. Cl. 95—89 R **12 Claims**

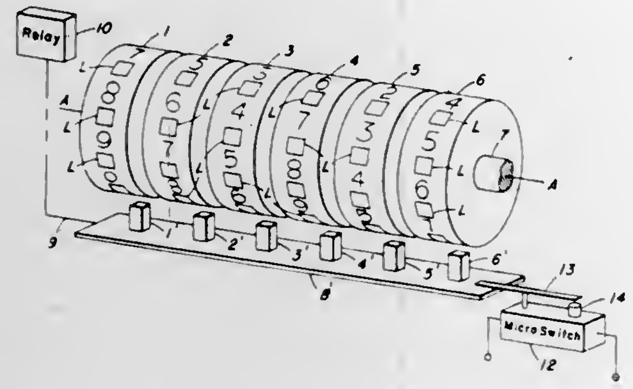


A diazotype copy machine including a developer unit having an applicator roller for applying developer to a copy sheet and means for dispensing a substantially uniform coating of developer onto the surface of said applicator roller including means movable toward and away from contact with said applicator roller between an engaged and a released position. Control means is provided for moving said dispenser means between said engaged and said released position and drive means is provided for normally driving said roller in one direction to make copies. Said drive means includes slip clutch means permitting free rotation of said applicator roller in said one direction relative to said drive means, and means is provided for reversing said drive means whereby said applicator roller may be freely rotated in both directions to facilitate removal of a copy sheet jam around said roller.

3,702,097
ANTI-HAMMER APPARATUS FOR POWERED IMPRINTERS

Lloyd E. St. Jean, Huntington, N.Y., assignor to Interface Industries, Inc., Hauppauge, N.Y.
Filed Aug. 19, 1971, Ser. No. 173,144
Int. Cl. B41j *7/34*
U.S. Cl. 101—99 **10 Claims**

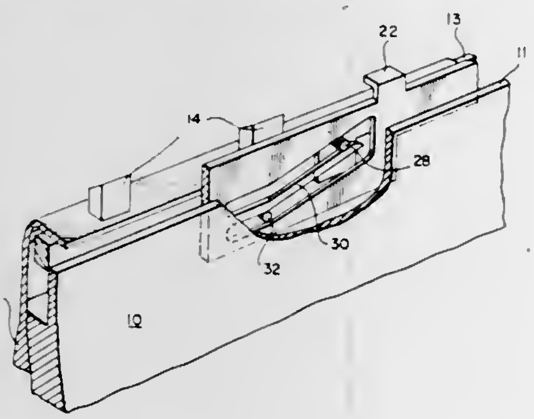
Anti-hammer apparatus which provides only a selected interval in which the print drums of a powered imprinter may be locked in a fixed relationship is provided in accordance with the teachings of the present invention. Upon a failure to achieve locking within such selected interval, a locking circuit



is disabled to prevent repeated attempts at locking from damaging the print drums and/or the locking mechanism therefor.

3,702,098
MOUNTING FOR THIN PRINTING PLATES

William H. Eburn, Jr., Westport, Conn., assignor to W. R. Grace & Co., New York, N.Y.
Filed March 5, 1971, Ser. No. 121,358
Int. Cl. B41f *1/36*
U.S. Cl. 101—415.1 **4 Claims**

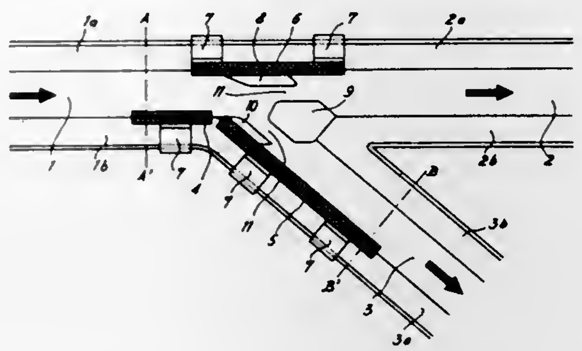


The invention disclosed is directed to a mounting means for detachably mounting flexible thin printing plates. Printing plates are detachably mounted on at least one terminal edge of the backing plate or saddle by means of a studded plate securing bar which is spring biased by a slidable bar positioning element. The co-action of the positioning element and the securing bar both disposed within the thickners of the backing plate or saddle provides an efficient highly acceptable means for securing a thin printing plate in position.

3,702,099
ELECTROMAGNETIC JUNCTION, INTER ALIA FOR AN OVERHEAD DUO-RAIL CONVEYOR

Pierre A. Ricaud, Chatou, and Simon A. Cynober, Paris, both of France, assignors to Jeumont-Schneider, Paris, France
Filed Nov. 21, 1969, Ser. No. 878,758
Claims priority, application France, Nov. 22, 1968, 68174834
Int. Cl. E01b *25/26*
U.S. Cl. 104—105 **8 Claims**

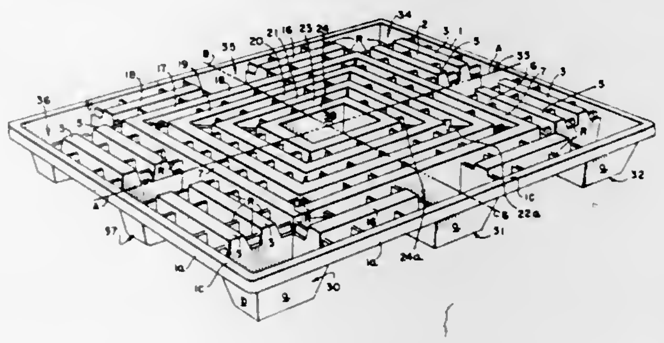
An electromagnetic junction of use inter alia for an overhead duo-rail conveyor moving loads without transfer chain and moving blading, comprising: for each direction upstream and downstream of the junction, a stationary polyphase field system extending parallel to the rail of the particular junction branch concerned and energized by a polyphase a.c. supply; for each load to be carried and sent over the junction, an armature in the form of an electrically conductive plate secured to or forming part of the load; means for bringing each load as far as the junction entry and for removing the same at the junction exit, and a switching facility so devised as, when a



load enters the junction, to energize simultaneously the junction upstream branch field and the field of that downstream branch of the junction to which the load is required to go.

3,702,100
MOLDED PALLET

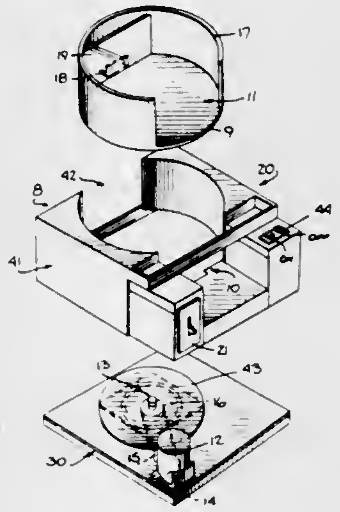
Thomas P. Wharton, Neenah, Wis., assignor to Menasha Corporation
Filed April 5, 1971, Ser. No. 131,087
Int. Cl. B65d *19/38*
U.S. Cl. 108—58 **10 Claims**



The invention relates to lightweight, nestable, reusable, molded plastic pallets used for support and transport of articles stacked thereon. The pallet has a generally corrugated structure, the transverse cross-sectional contour of the corrugations being trapezoidal in shape. The corrugations in the medial portion of the pallet are formed in concentric rectangles so as to reinforce each other and minimize distortion and racking. A series of spaced corrugations are also positioned in parallel relation to each side of the pallet. All corrugations are reinforced in a direction opposite to the longitudinal axis of the corrugations by integral spaced ribs between the corrugations at the top face and lower face of the platform. These reinforcing ribs are aligned so as to provide continuous spaced beams or extending through the pallet body lengthwise and crosswise to provide maximum strength and stiffness in the direction opposite to the axes of the corrugations. The construction results in omni-directional strength and stiffness of the pallet. The ribs are also of such height as to act as stacking supports when the pallets are nested to provide strength to hold and distribute the weight of the stacked pallets and also to prevent jamming and sticking together of one pallet within another. The pallet is provided with a plurality of spaced integral hollow feet depending from the bottom face of the platform which have a rectangular truncated pyramidal contour. The inner bottom walls of the feet are provided with integral reinforcing cross-ribs. The side walls of the feet are also reinforced by the adjacent ends of the corrugations integrally molded therewith. The pallet is also provided at its outer periphery with a continuous integral L-shaped turned-down channel which is also reinforced with spaced transverse ribs to protect the edges of the pallet against abuse or damage by accidental mechanical impact.

3,702,101
TELLER MECHANISM

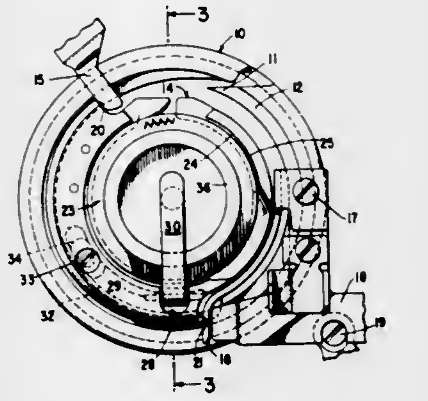
George E. Moore, Jamestown, N.Y., assignor to Watson Manufacturing Company, Inc., Jamestown, N.Y.
Filed Dec. 28, 1970, Ser. No. 101,593
Int. Cl. E06b *7/32*
U.S. Cl. 109—19 **16 Claims**



A theft proof teller mechanism comprised of a rotatable plate with a bullet resistant upstanding cylindrical wall with an access opening. The access opening can be presented to either the public or the cashier by rotation of the cylinder through the use of a push button motor which is preferably automatically stopped after 180° rotation. A slip clutch in the drive motor drive provides for "finger pinch" protection.

3,702,102
SELECTABLE BOBBIN THREAD TENSIONS

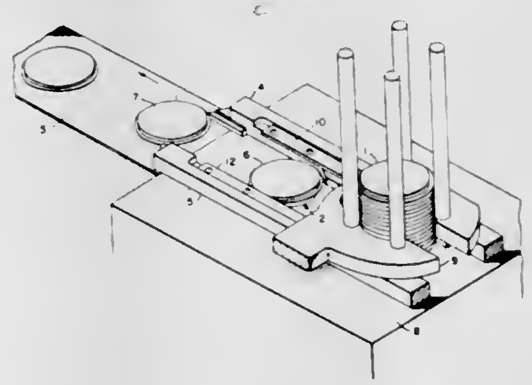
Donald R. Davidson, Parsippany, and Edmund B. Wilson, III, Dover, both of N.J., assignors to The Singer Company, New York, N.Y.
Filed July 19, 1971, Ser. No. 163,840
Int. Cl. D05b *57/14*
U.S. Cl. 112—184 **3 Claims**



A method and apparatus for obtaining a variety of selectable bobbin thread tensions in a lockstitch sewing machine wherein bobbin thread tension is achieved by resisting bobbin rotation by pressing a bobbin hold down arm against an annular protuberance on a flange of the bobbin and concentric with the center of rotation of the bobbin, replacing the bobbin with one similarly constructed but having its protuberance at a suitable different radius when a change in bobbin tension is required.

3,702,103
SELF-ADJUSTING CUT-OFF KNIFE

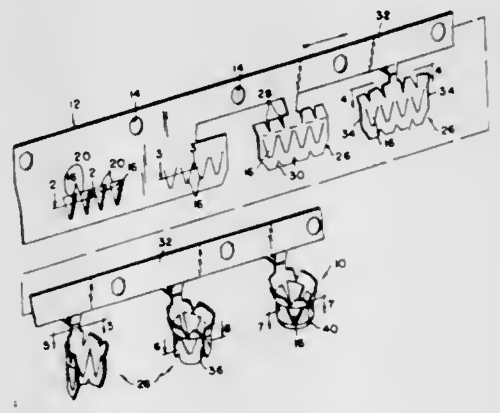
Raymond E. Price, 64 Holtt Road, Belmont, Mass.; Clifford F. Tirrell, 2 MacDougall Ct., South Weymouth, Mass.; Richard C. Adams, 36 Woodchester Circle, Waltham, Mass., and Robert W. George, Strawberry Lane, Belle Mead, N.J.
Division of Ser. No. 813,039, April 3, 1969, Pat. No. 3,606,850. This application May 24, 1971, Ser. No. 146,229
Int. Cl. B21d *43/16*
U.S. Cl. 113—114 BE **1 Claim**



A pair of cut-off knives for stripping the lower closure of a vertical stack of closures is floated on a spring shim to be able to ride between the curl portions of closures one of whose curl is so oversized as to otherwise cause the knives to interfere with the curl portion.

3,702,104
METHOD OF MANUFACTURE FOR WIRE GRIP TERMINAL

Weldon L. Brubaker, Mechanicsburg, Pa., assignor to Berg Electronics Inc., New Cumberland, Pa.
Division of Ser. No. 851,030, Aug. 18, 1969, Pat. No. 3,601,786. This application Aug. 20, 1970, Ser. No. 65,406
Int. Cl. B21d *53/36*
U.S. Cl. 113—119 **2 Claims**

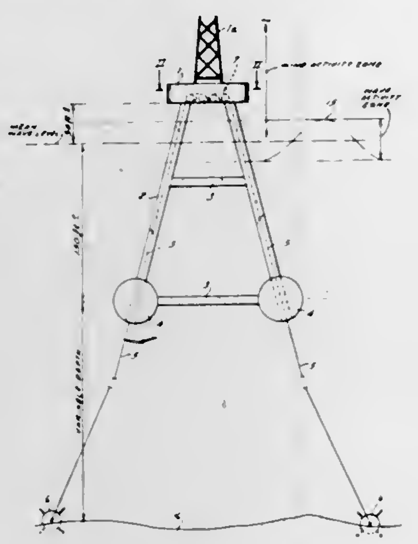


A wire grip circuit board eyelet with wire-engaging burrs on the edges of the wire grip fingers and the method of making the same.

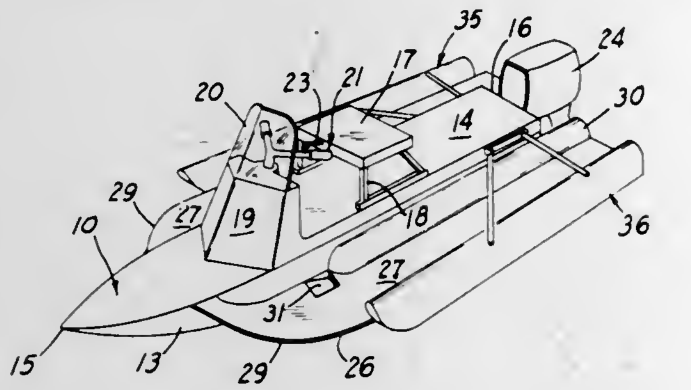
3,702,105
DEEP WATER DRILLING RIG

Samuel I. Feldman, Fairlawn, N.J., assignor to The Lummus Company, Bloomfield, N.J.
Filed March 17, 1971, Ser. No. 125,297
Int. Cl. B63b *35/00*
U.S. Cl. 114—0.5 D **4 Claims**

A deepwater float has a supporting platform and downwardly depending legs which carry buoyancy tanks arranged annularly with reference to the platform, or a single ring-shaped buoyancy tank. Tethers secure the float against lateral displacement with reference to a selected portion of the deepwater floor. Gyroscopic controls normally maintain the tethers at a length and the buoyancy at such positive value that the tethers are taut and the platform is at a selected distance above mean wave level; they increase the tether length and positive buoyancy in automatic response to an increase in the height of the mean wave level.



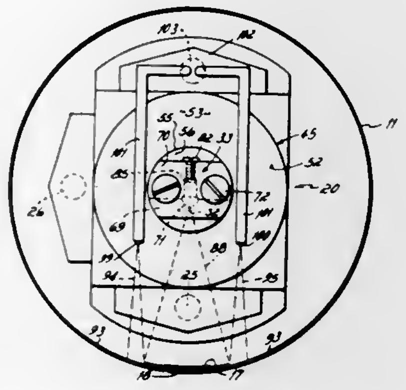
3,702,106
WATER CRAFT CONSTRUCTION
Donald L. Wilder, Route No. 2, Box 406, Gainesville, Ga.
Filed Jan. 11, 1971, Ser. No. 105,282
Int. Cl. B63b *35/00, 43/14*
U.S. Cl. 115—70 **11 Claims**



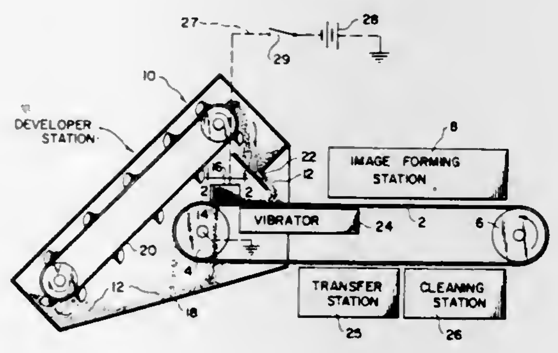
A water craft construction including a hull body portion having a bottom, sides and top deck with the bottom and sides converging to a point adjacent the top deck to define a water craft bow means and including transom means extending transversely between the bottom, sides and top deck adjacent a rear end thereof to define a water craft stern means. An operator seat means is supported above the top deck adjacent an intermediate portion of the hull means and includes an operator control means supported on the top deck forwardly of the operator seat means. Means are provided on the transom means for supporting a power motor means and outrigger pontoon means are supported on opposite lateral sides of said hull body portion.

3,702,107
AN APPARATUS FOR STRIPING INSIDE SEAMS OF CANS
Alvin A. Rood, Westlake; Edwin F. Hogstrom, and William C. Stumphauzer, both of Sheffield Lake, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio
Filed Jan. 19, 1971, Ser. No. 107,632
Int. Cl. B05c *11/00*
U.S. Cl. 118—2 **13 Claims**

An apparatus for applying an impervious protective coating over the seams of cylindrical metal can bodies either before or after the seams are welded, soldered, or cemented and prior to spray coating the complete interior of the bodies. The apparatus is operable to intermittently apply an airless spray to the interior seams of the cans as they continuously move past an airless spray gun secured to the end of a stubhorn of a can forming line. The apparatus includes a new and improved airless spray nozzle which is operable to atomize the spray nearer the nozzle than has heretofore been possible. It also includes a pair of air jets located on opposite sides of the spray and operable to confine the atomized spray or fog to the seam of the can so that little or no excess material is sprayed onto that portion of the can located adjacent the seam.

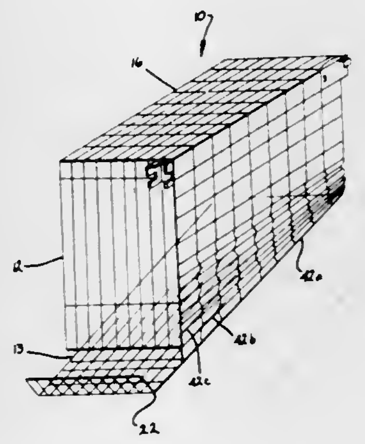


3,702,108
IMAGE DEVELOPMENT STATION
Conrad Altmann, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 12, 1969, Ser. No. 875,818
Int. Cl. B05b *5/02;* **G03g** *13/00*
U.S. Cl. 118—637 **13 Claims**



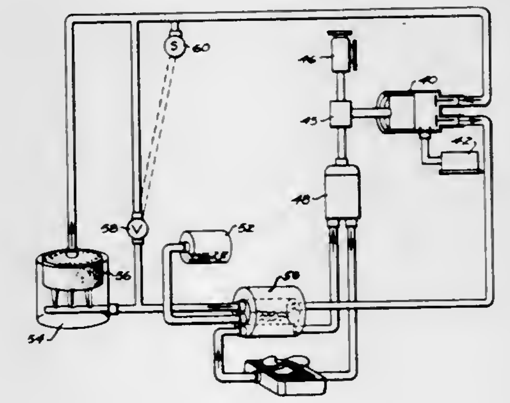
A development station is provided whereby an electrostatic image moving along a horizontal path is developed by a developer which consists of a mixture of toner particles and carrier beads. The developer is dispensed across the electrostatic image as it moves along its path and agitated by a barrier extending across the path at a height from the image path to permit passage of toner particles sticking to the electrostatic image but for the most part prohibiting passage of carrier beads. This barrier may include a variety of shapes such as a flat blade extending at an angle across the developer, a curved blade, a counter-rotating paddle wheel, a plurality of blades wherein the first blade is at a height to allow both toner and carrier beads to pass thereunder and a second blade is at a height to permit only toner particles adhering to the electrostatic image to pass thereunder, or the blade may be comb-shaped so that a portion of the excess developer and carrier beads may move along with the electrostatic image. The blade can be used to provide solid area development by applying a potential thereto.

3,702,109
ANIMAL CAGE CONSTRUCTION AND METHOD FOR CONSTRUCTION PANEL THEREFORE
Robert L. Van Huis, Zeeland, Mich., assignor to Big Dutchman, Inc., Zeeland, Mich.
Filed July 28, 1971, Ser. No. 166,876
Int. Cl. A01k *31/06*
U.S. Cl. 119—17 **11 Claims**



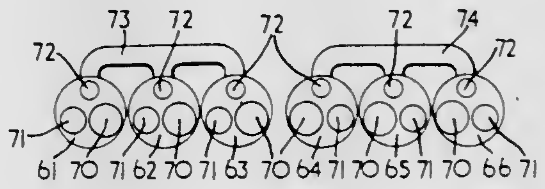
An animal cage construction having a plurality of sides forming an enclosure. At least some of the sides are constructed of a wire fabric having at least one terminal edge inclined at angles to the direction in which the wires forming the fabric extend. The terminal edge is formed by predetermined ones of the wires being crimped to give the desired shape of the terminal edge.

3,702,110
CLOSED CYCLE ENGINE SYSTEM
Lawrence C. Hoffman, Azusa; Mark I. Rudnicki, Glendora, and Howard W. Williams, San Bernardino, all of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.
Filed Nov. 30, 1970, Ser. No. 93,677
Int. Cl. F02b *29/00*
U.S. Cl. 123—119 A **15 Claims**



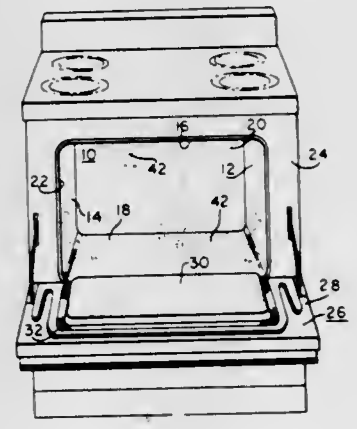
Disclosed is an engine, preferably of the diesel type, operating in a closed cycle system in which there is generated a mixture of gaseous oxygen and water vapor for its "breathing." The generation of this mixture uses the engine exhaust products, which comprises mainly, carbon dioxide, oxygen and water vapor. This synthetic "air" combusts with the diesel fuel to drive, for instance, an electrical generator. The system incorporates units connected to the engine exhaust which employ the carbon dioxide to produce new oxygen, condense the water vapor and recycle the unused oxygen, and a further provision for control of the oxygen production.

3,702,111
ATMOSPHERIC POLLUTION CONTROL ARRANGEMENT FOR INTERNAL COMBUSTION ENGINE
John Harold Weaving, and Cecil David Haynes, both of c/o British Leyland Motor Corp. Limited, Group Research Laboratory, (Atmospheric Pollution Control) Juguar Works, Browns Lane, Coventry, England
Filed Feb. 19, 1971, Ser. No. 116,829
Claims priority, application Great Britain, Feb. 19, 1970, 7,908/70
Int. Cl. F02m *25/06;* **F02b** *47/08*
U.S. Cl. 123—119 A **4 Claims**



A multi-cylinder internal combustion engine having a valve in addition to normal inlet and exhaust valves in the cylinders of the engine through which part of the gaseous products of combustion are removable, before they have passed through the exhaust system of the engine and are re-introduced into another cylinder of the engine after closure of the inlet valve thereof. The additional valves of the cylinders are interconnected in pairs by manifolds to permit this recirculation of exhaust gases. By recirculating part of the exhaust gases from each cylinder in this way the proportion of oxides of nitrogen in the final exhaust gases from the engine is reduced.

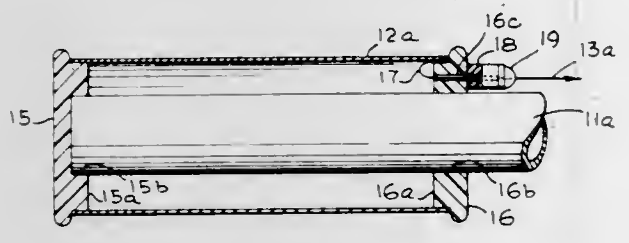
3,702,112
DOOR FOR CONTINUOUS-CLEANING OVEN
Arthur T. Keppler, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 5, 1971, Ser. No. 104,084
Int. Cl. A21b *1/00;* **F24c** *15/02*
U.S. Cl. 126—19 R **3 Claims**



An oven of the continuous-cleaning type in which the oven door therefor is provided with a muffle panel to which a continuous-cleaning coating is applied while the portion of the door inner panel which borders the muffle panel has a smooth-surfaced porcelain enamel applied thereto.

3,702,113
ELECTRODE APPARATUS FOR EXERCISER HANDLEBAR

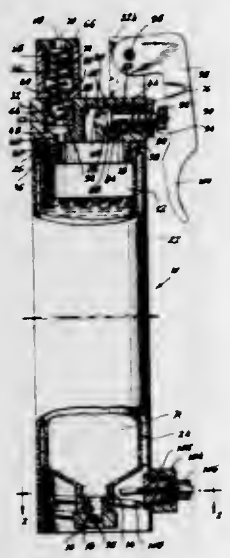
Walter Vincent Blockley, 27727 Pacific Coast Highway, Malibu, Calif.
Filed Aug. 20, 1969, Ser. No. 853,233
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 E **16 Claims**



An electrode apparatus is disclosed for monitoring the condition of the heart while the subject is in the process of exercising. The electrodes are mounted on the handlebar or handrail of the exercise machine and are grasped with the hands to produce the electrical signals corresponding to the functioning of the heart.

3,702,114
LIQUID REFRIGERANT SPRAY DEVICE

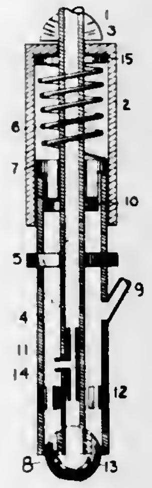
Setrag A. Zacarian, Springfield, Mass., assignor to Frigitronics of Conn., Inc., Shelton, Conn.
Filed Aug. 26, 1970, Ser. No. 67,046
Int. Cl. A61b *17/36;* **A61m** *11/00*
U.S. Cl. 128—173 R **6 Claims**



There is disclosed medical apparatus for spraying a low boiling point liquid refrigerant directly onto a site to be treated. It comprises a container which is vented but has a valve for selectively closing the vent, normal boiling of the liquid thereby resulting in self pressurization. A discharge orifice at the bottom of the container leads through an evaporating coil to an applicator, to which may be connected interchangeable needles. The evaporating coil permits partial vaporization of the refrigerant so that the spray is a liquid-gas mixture with little propensity to drip or run from the point of contact.

3,702,115
DEVICE FOR SUCTIONING

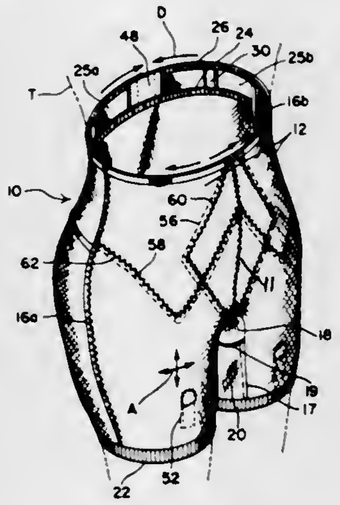
Harold Elcaness, P.O. Box 426 Payne Rd., Block Island, R.I.
Filed Aug. 7, 1970, Ser. No. 61,879
Int. Cl. A61m *4/00*
U.S. Cl. 128—276 **1 Claim**



The suction device incorporating the present invention has a telescoping upper and lower casing and an interposed carrier-director with fixtures attached for the purpose of controlling suction and the amounts of fluid allowed into the instrument, and depending on the controlled amount of protrusion of the carrier-director, control of suctioning and the amounts of fluid to the parts suctioned is obtained. Means of releasing unwanted suctioned matter is provided for in the device. The carrier-director is hollow and carries fluid from a source into the distal end, the outlet is guarded by a t-tube which is occluded when the outlet is brought in contact with a hollow ring fixed to the lower casing. At the end of the carrier-director is a ball which occludes the opening of the lower casing at the distal end. Depending on the position of the ball relative to the mouth of the lower casing and the opening in the carrier-director to the fixed ring, the fluid flows readily when the opening of the t-tube is not occluded. The constant suction applied to the outlet in the lower casing, is varied in effect by the relative position of the ball. When the ball occludes the mouth of the lower casing, the suction is applied only to the contents of the lower casing. When the ball is protruded a fixed distance when the upper casing meets a fixed obstacle on the lower casing, this distance is also the amount required to bring the t-tube into the ring thus shutting off inlet of fluid. The suction is now applied to the part to be suctioned. Further protrusion a fixed distance by pressure on a knob on the proximal part of the director-carrier allows both suction and fluid to be applied to the part to be suctioned. Thus unwanted intrusion of a part being suctioned is pushed further away and is washed away by a flush of fluid following the release which occurs when the t-tube is pushed away from the lumen of the ring. When suction is desired to be continued in the part to be suctioned the pressure on the knob is released and a spring-like fixture on the upper end of the carrier brings the carrier director back to the position of the upper casing being compressed against the lower casing. If suction to the part of the organ being suctioned is desired to be interrupted, release of the pressure on the upper casing allows the carrier-director to return the position of the uncompressed spring-like device now suction is applied only to the suctioned material by reason of the lower casing being closed off from the part to be suctioned by the ball on the end of the returned carrier-director, and fluid flows freely to dilute the suctioned material and to pressure the material out of the suction egress tube. This occurs because the t-tube on the carrier-director is carried away from the ring, so the outlet of fluid is free.

3,702,116
UNDERGARMENT WITH ADJUSTABLE WAIST SIZE AND BACK SUPPORT

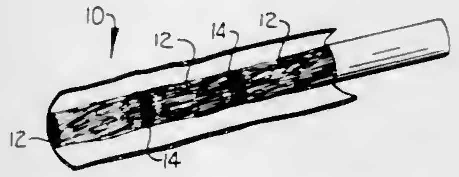
Jack Panes, Bayside, N.Y., assignor to Magic Charm, Inc., New York, N.Y.
Filed March 13, 1970, Ser. No. 19,333
Int. Cl. A41c *1/00*
U.S. Cl. 128—548 **10 Claims**



An undergarment is made of two-way stretch power net material. The undergarment has an upper tubular portion which encircles the wearer's waist. The front of the undergarment extends higher than the rear. A pair of auxiliary two-way stretch belt panels reinforced by flexible strips extend around the back from lateral seams and are adjustably engaged by fasteners, to help take in the abdomen, creating a custom-fit waist size, to help support the lower back of the wearer, and to keep the undergarment from riding up or down.

3,702,117
CIGARETTE

Theodore H. Borthwick, 2501–D Queen St., Winston-Salem, N.C. 27103
Filed Nov. 23, 1970, Ser. No. 91,940
Int. Cl. A24d *1/10*
U.S. Cl. 131—4 A **4 Claims**

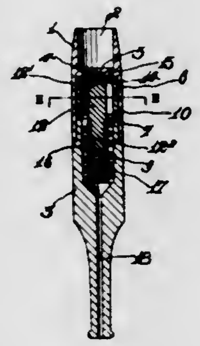


A significant portion of a length of a cigarette is preserved, should the cigarette be left unattended by a smoker who is preoccupied with other matters, by the provision of flammability barriers within the length of the cigarette which divide the length of the cigarette into sections. Due to a particular relationship among the combustion temperatures of the tobacco filling for the cigarette and the flammability barriers, use of the cigarette in a normal manner proceeds uninhibited while an unattended cigarette is extinguished.

3,702,118
CIGARETTE HOLDER WITH TAR-COLLECTING INSERT

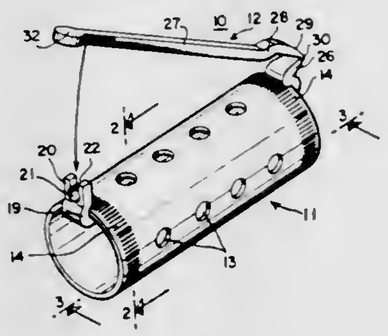
Katuhisa Terasaki, 43 Kohmiya-cho, Edogawa-ku, Tokyo, Japan
Continuation of application Ser. No. 807,628, Mar. 17, 1969. This application Sept. 8, 1970, Ser. No. 70,562
Int. Cl. A24f *1/16, 7/04*
U.S. Cl. 131—209 **6 Claims**

A tar-collecting insert consisting of a first and a second insert member, said first insert member being inserted in the bore of the cigarette holding member and being formed with an open-topped and bottom-perforated walled cylindrical piece, a detachable cover having a central narrow through-hole and a flat-topped solid rod extending axially and centrally through said bottom wall, the upwardly extending portion of said rod leaving a narrow clearance between its flat top and the lower face of said cover, said flat top facing said central narrow hole of the cover, the downwardly extending portion being received in a bore in said second insert member which, in turn, is inserted in the bore of the mouthpiece member and is hollow and cylindrical and has a helical thread provided integrally around its external surface to provide a helical passageway with the inner wall of the mouthpiece member.



3,702,119
HAIR CURLER

Nathan L. Volomon, Cedar Lane, Englewood, N.J. 07631
Filed Feb. 9, 1972, Ser. No. 224,691
Int. Cl. A45d *2/14*
U.S. Cl. 132—41 B **9 Claims**

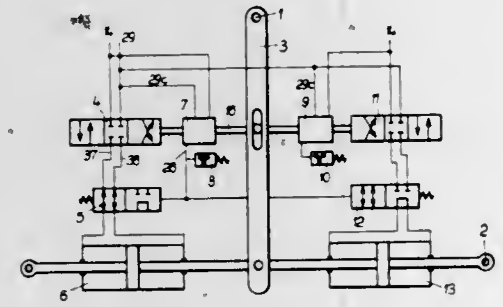


A hair curler includes a perforate thin walled tubular mandrel and a hair clamp which includes a stiff first arm extending along the inner face of the mandrel and spaced from the opposite side of the mandrel and retained to the mandrel by a pair of legs projecting from opposite ends of the first arm and having recesses which peripherally slidably engage the opposite borders of the mandrel. The clamp arm is restricted against longitudinal movement and is peripherally slidable about the mandrel. A second clamp arm is self-hinged to one of the legs and is swingably between closed releasable engagement with the opposite leg and an open condition.

3,702,120

METHOD AND MEANS FOR IMPROVING AND INCREASING THE RELIABILITY OF HYDRAULIC AND PNEUMATIC MULTICIRCUIT CONTROL SYSTEMS

Kurt Redeker, Mainz, Germany assignor to Feinmechanische Werke Mainz G.m.b.H., Mainz am Rhine, Germany
Filed June 10, 1971, Ser. No. 151,772
Claims priority, application Germany, Sept. 5, 1970, P 20 44 053.3
Int. Cl. F16k *11/10*
U.S. Cl. 137—1 **11 Claims**



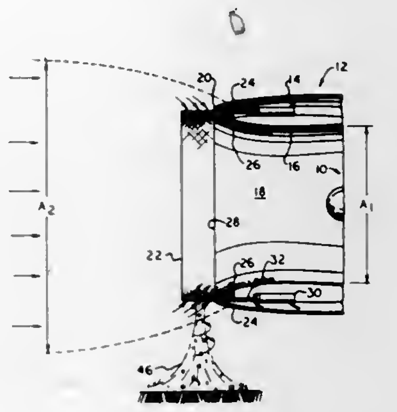
The present invention relates to method and means for improving and increasing the reliability of hydraulic and pneumatic multicircuit control systems, in particular upon failure of a respective circuit in such systems, the input circuit when the system becomes inoperative, releasing signals for an uncoupling or disconnecting operation of the input circuit, and automatically effectuating a changeover to an auxiliary circuit system. The invention further relates to adjusting the drives operated by a fluid medium, e.g., acting on pistons, linear as well as rotary motors, which are actuated through control slide valve aggregates or units which are present at least in a dual arrangement. The duality includes dual energy supply, as well as double-acting signal circuit system, the operational elements thereof being used for the transformation of signals. The mechanical input signal and the feedback of the output signal are applied simultaneously and are substantially of the same magnitude with respect to the control slide valve aggregates arranged in multiple circuitries.

3,702,121

INLET FLOW CONTROL SYSTEM FOR JET ENGINE

Victor Millman, San Diego, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.
Filed Jan. 20, 1971, Ser. No. 107,887
Int. Cl. F02b *27/00*
U.S. Cl. 137—15.1 **11 Claims**

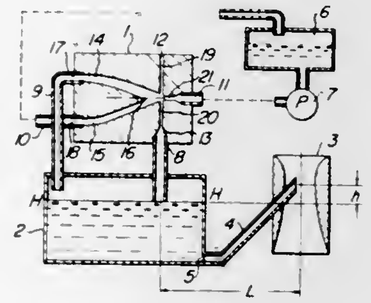
System includes a housing which comprises all or part on an inlet throat for directing flow of intake air from ambient atmosphere to compressor of jet engine. Housing has thin, slightly rounded inlet lip. At standstill or low ground roll speeds, compressor demand pulls air in laterally across inlet lip and this air breaks away from housing inner wall at small curvature of lip, disturbing total flow and often causing compressor stall and engine flameout. Perforate fence, which is preferably wire screen, extends along periphery of inlet lip in fore and aft attitude, and laterally flowing air passes through it. Fence produces fine turbulence and high velocity and energy which energizes the boundary layer within the throat and improves airflow to compressor. At high cruise speeds, the excess air adjacent to the stream tube flows laterally outward across the inlet lip and the same perforate fence strains this airflow and energizes the boundary layer on the outer surface of the housing to delay the drag rise of the inlet lip. In a strong cross wind, the same fence acts in substantially the same way to improve the recovery of the inlet. The fence may be fixedly mounted in active position or may be retractable within or flush upon the forward portion of the housing.



3,702,122

LIQUID LEVEL CONTROLLING APPARATUS

Masanori Hanaoka, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan
Filed Dec. 15, 1970, Ser. No. 98,405
Claims priority, application Japan, Mar. 14, 1970, 45/21,605; July 3, 1970, 45/58,432
Int. Cl. F15c *1/08*
U.S. Cl. 137—81.5 **6 Claims**



A wall attachment logic element is interposed between a fuel tank and a fuel regulating container for the purpose of controlling the liquid level in said fuel regulating container, and when the liquid level therein has fallen below a set level, a pressure variation occurs at the point of divergence of the ducts formed in said fluidics or fluidic element to direct the liquid being delivered from a fuel pump so as to be introduced into a conduit leading to said container, whereas when the liquid level has risen above said set level, the liquid passes through a separate duct in said fluidics and is returned to said fuel tank through a return pipe, and concurrently the liquid in said container is sucked up and delivered into the return pipe, whereby the surface of the liquid in the container may be maintained at the set level.

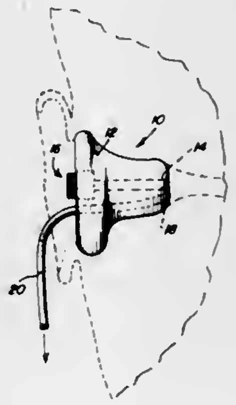
ERRATA

For Classes 137—469 thru 176—3 see:
Patents Nos. 3,702,141 thru 3,702,163

3,702,123

VENTED HEARING AID EAR MOLD

John T. Macken, 5800 Chowen, Edina, Minn. 55424, and Albert H. Schaefer, 7418 Girard, Richfield, Minn. 55423
Filed Sept. 9, 1971, Ser. No. 179,048
Int. Cl. G02k *13/00;* **H04r** *25/00*
U.S. Cl. 181—23 **17 Claims**

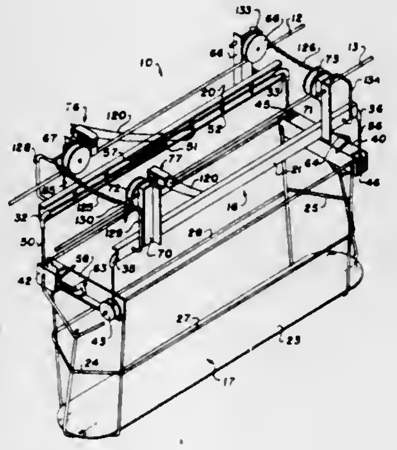


An adjustable vented ear mold assembly for use with hearing aids, and the like said ear mold assembly including an acoustical valve with means providing an infinite number of adjustments or tuning settings by a wearer to achieve the most desirable acoustic results.

3,702,124

TRAVERSING SKIPS

Stanley E. Highland, 316 Wellington Ave., Chilliwack, British Columbia, Canada
Filed July 20, 1970, Ser. No. 56,282
Int. Cl. B61b *7/06;* **E01b** *25/16;* **E04g** *3/16*
U.S. Cl. 182—14 **34 Claims**

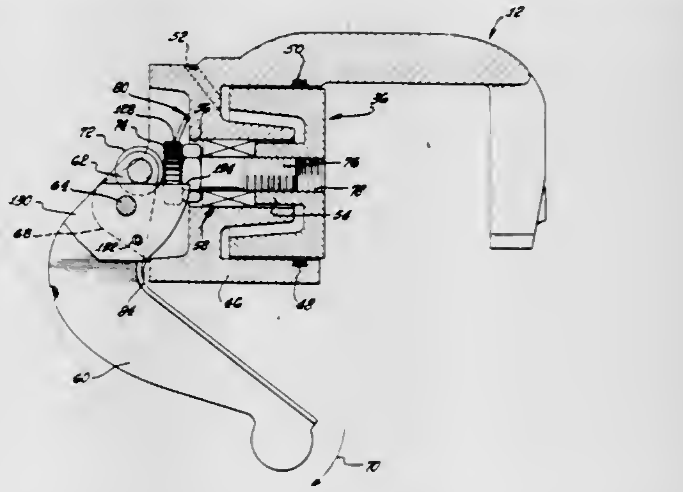


A movable skip adapted to be removably mounted on power lines and the like and to carry a man who can pull the skip along the lines or operate a motor to run the skip therealong. The skip includes a cage for carrying the operator, and suspension means for maintaining the cage level when the remainder of the skip is not level due to the position of the lines. The skip has supporting pulleys adapted to move along the lines, and the arrangement is such that the operator can use his weight to help lift the pulleys successively over any hardware connected to the lines.

3,702,125

COMPENSATING HYDRAULIC BRAKE STRUCTURE WITH MANUAL OVERRIDE

Dan W. Jeffries, Los Angeles, Calif., assignor of a fractional part interest to Harold W. Nash, Los Angeles, Calif.
Filed June 18, 1970, Ser. No. 47,461
Int. Cl. F16d *65/52*
U.S. Cl. 188—71.8 **7 Claims**



The improved compensator utilizes a friction ring that locks up in a small bore in the caliper part located behind the piston. A long mounting screw projects rearwardly from the piston and extends through the friction ring and the caliper bore. A double acting spring suspension provides a floating mounting for the piston and determines its normal axial position. One section of the spring suspension is interposed between the friction ring and the back of the piston and acts as a memory spring; the other section of the spring suspension is interposed between the friction ring on the opposite side and an adjustment nut carried on the mounting screw. The adjustment nut is exteriorly accessible.

3,702,126

FRICTION PAIR FOR USE IN AIRCRAFT BRAKES

Phillip R. Eklund, 991 Stanwick Drive 45430, and Joseph E. Krysiak, 510 Wilmington Ave. 45420, both of Dayton, Ohio
No Drawing. Filed Dec. 23, 1970, Ser. No. 101,199
Int. Cl. F16d *69/02*
U.S. Cl. 188—251 M **4 Claims**

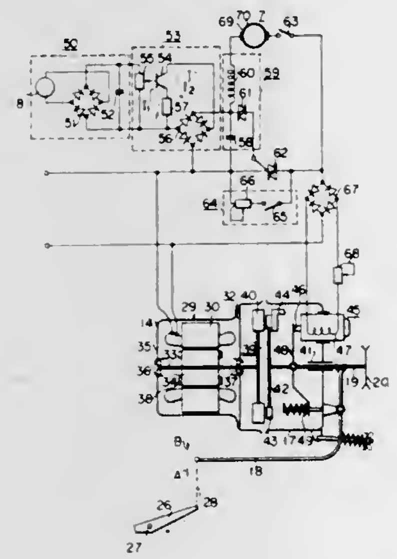
Rotor discs of aircraft disc brakes are constructed of alloyed steel having a nominal hardness of at least about 64 Rockwell C and brake pucks are constructed of either high purity aluminum oxide or stabilized zirconium oxide. The friction pairs thus produced exhibit a coefficient of friction which varies less than 0.1 over the temperature range of from 400° F. to 1000° F. The materials used also exhibit great resistance to wear. Thus, this invention is useful in that it provides improved friction pairs for use in aircraft disc brakes.

3,702,127

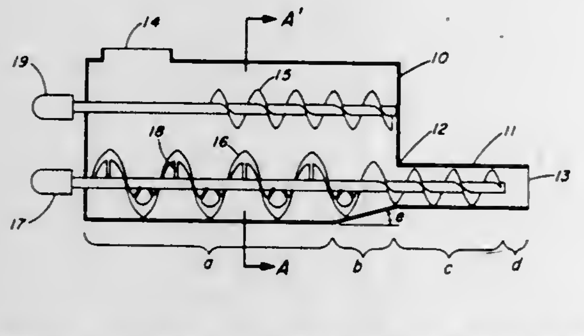
CLUTCH-BRAKE-MOTOR ASSEMBLY HAVING MECHANICAL AND ELECTROMAGNETIC ACTUATORS

Masahiro Yokoyama, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 15, 1970, Ser. No. 72,338
Claims priority, application Japan, Sept. 26, 1969, 44/76,714
Int. Cl. F16d *67/02*
U.S. Cl. 192—18 B **4 Claims**

A clutch-brake-motor assembly comprises an electric motor having a rotary output shaft, a flywheel connected to the output shaft, a brake device positioned in spaced-apart relationship from the flywheel, a clutch plate alternatively movable into and out of engagement with the flywheel and the brake device, a rotary output member connected to the clutch plate and rotationally driven by the electric motor whenever the clutch plate engages with the flywheel, a biasing spring normally biasing the clutch plate into engagement with the brake device to brake the output member against rotational movement, and actuating means for selectively moving the clutch plate out of engagement with the brake device and into engagement with the flywheel. The actuating means comprises a mechanical system for initially overriding the biasing spring and starting movement of the clutch plate towards the flywheel and an electromagnetic system [illegible]izable in response to actuation of the mechanical system for electromagnetically continuing movement of the clutch plate towards the flywheel. The magnitude of the electromagnetic force almost equals and counteracts the magnitude of the biasing spring force and therefore only a small mechanical force is required once the electromagnetic system is energized.

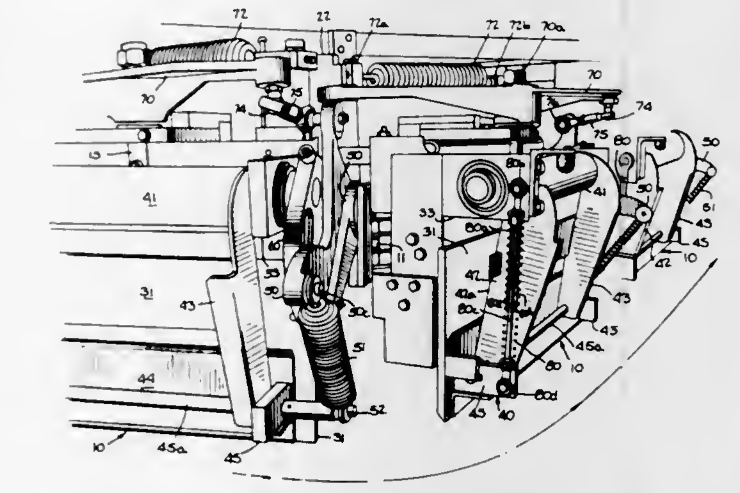


3,702,128
SOLIDS FEEDER APPARATUS
Frederick J. Trotter, Jr., Bay City, Tex., assignor to Celanese Corporation, New York, N.Y.
Continuation of abandoned application Ser. No. 779,159, Nov. 26, 1968. This application Mar. 26, 1971, Ser. No. 128,522
Int. Cl. B65g *47/16, 33/00*
U.S. Cl. 198—64 **6 Claims**



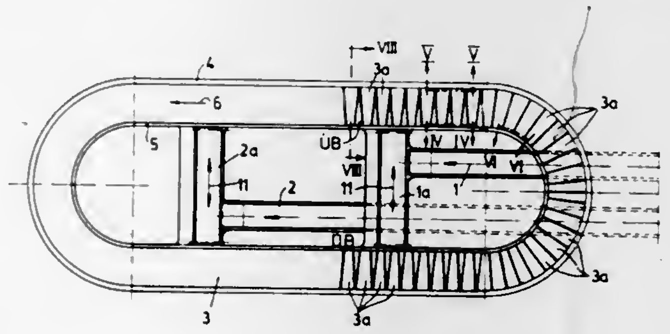
A screw conveyor-type apparatus for feeding granular solids from a feed vessel having a U-trough bottom to a pressurized system via a circular conduit. The apparatus contains a cantilevered feed conveyor screw suspended in the U-trough and extending a portion of the way into the circular conduit as well as an overhead reverse conveyor screw which recycles solids away from the mouth of the circular conduit. The portion of the feed screw within the feed vessel is larger than that portion extending into the circular conduit.

3,702,129
MECHANICAL BOOK CLAMP
Richard B. Hawkes, Easton, and Donald P. Johnson, Bethlehem, Pa., assignors to Harris-Intertype Corporation, Cleveland, Ohio
Filed Oct. 19, 1970, Ser. No. 81,741
Int. Cl. B65g *15/58*
U.S. Cl. 198—180 **14 Claims**



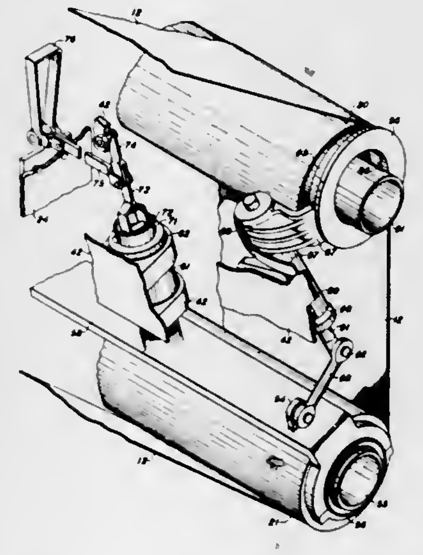
A book binding machine is provided with a plurality of interconnected book clamps each of which is coupled to and driven by means of an endless chain along a path which extends in a loop about the machine. Each of the clamps is guided along the path by means of rollers which are in engagement with a guide track. Each of the clamps are comprised of an outer clamp assembly pivotally mounted along a horizontally extending axis to an inner clamp assembly. Each of the clamp assemblies has a clamp plate disposed thereon in a facing relationship with one another. A lever arm rotatable about an axis parallel to the axis of rotation of the outer clamp is coupled thereto in order to effect rotation of the outer clamp with respect to the inner clamp so that a book may be bound therebetween. When the outer clamp assembly is swung open about the horizontal pivotal axis, a book can be moved conveniently to a position adjacent to the inner clamp assembly.

3,702,130
DISTRIBUTING DEVICE FOR ARTICLES, PARTICULARLY LUGGAGE
Ernst Fraenzke, Grobenzell, Germany, assignor to H. Schaefer KG, Munich, Germany
Filed Mar. 15, 1971, Ser. No. 124,294
Claims priority, application Germany, Sept. 21, 1970, P 20 46 485.1
Int. Cl. B65g *15/00*
U.S. Cl. 198—181 **9 Claims**



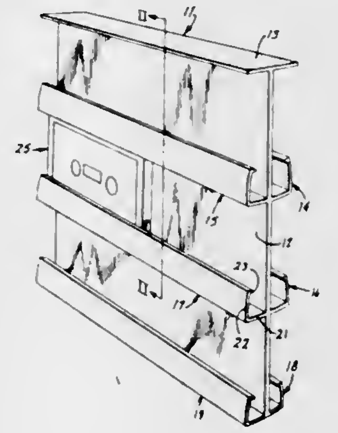
An endless conveyor of the luggage circulating type as used in airports and the like comprises an articulated series of luggage supporting plates which overlap each other roof shingle fashion and present a traveling platform which is transversely inclined for ready luggage pick-up and gap-free in the linear as well as in the curved stretches of the conveyor.

3,702,131
BELT TRACKING SYSTEM
David Roth Stokes, Webster, Salvatore Latone, Rochester, and William E. Jordan, Penfield, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 29, 1970, Ser. No. 102,311
Int. Cl. B65g *15/62*
U.S. Cl. 198—202 **8 Claims**



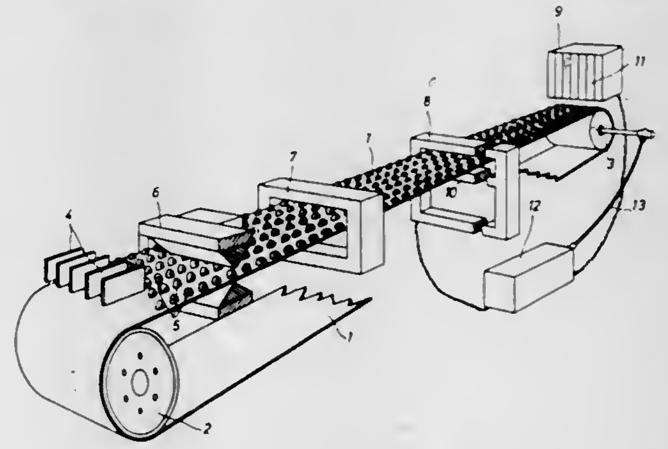
A belt tracking arrangement for use with a belt supporting roller in a belt assembly employing at least three rollers wherein the shaft for the roller is mounted for short pivotal movement about a control axis normal to its axis and which lies in a plane that bisects the angle of the belt runs on either side of the roller. The roller shaft is mounted between the legs of a yoke which has its axis of rotation in coincidence with the control axis.

3,702,132
CASSETTE CONTAINER
Larry L. Fites, Kalamazoo, and Kingsley M. Mann, Portage, Mich., and Karl A. Utrecht, Cincinnati, Ohio, assignors to The Upjohn Company, Kalamazoo, Mich.
Filed Oct. 1, 1970, Ser. No. 77,268
Int. Cl. A45c *11/00;* **B65d** *81/00, 85/67*
U.S. Cl. 206—1 R **11 Claims**



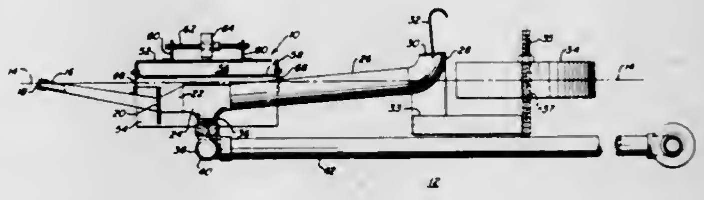
A device for holding relatively small and substantially flat articles, such as tape cassettes, said device preferably being formed from a substantially stiff but resiliently flexible plastic or metallic material. Said holding device has a flat and preferably rectangular main wall means and a plurality of shelf members having L-shaped cross sections and integral with said main wall means. Said shelf members are spaced from each other and are arranged for receiving and firmly holding an article, such as a tape cassette, with respect to the holding device. Handle means, top wall means and/or cover means may be provided.

3,702,133
PROCESS AND APPARATUS FOR MAGNETIC SEPARATION
Claude Jacques Vibert and Louis Jean Theodore Le Pape, Viviers, France, assignors to Societe Anonyme: Ciments Lafarge, Menier, and Etablissement Public: Agence Nationale de Valorisation de la Recherche (CANVAR), Paris, France
Filed Feb. 1, 1971, Ser. No. 111,576
Claims priority, application France, Feb. 6, 1970, 7004306
Int. Cl. B07c *5/344*
U.S. Cl. 209—81 A **9 Claims**



A method and apparatus for separating materials. The materials to be separated are loaded in parallel rows on a conveyor belt and pass by a demagnetising apparatus, a magnetising apparatus and then a sensor. An isolating apparatus is located downstream of the sensor to physically separate portions of the materials. Upon the detection of a magnetic field of a predetermined intensity the sensor produces a signal which is carried to the isolating apparatus via an amplifier and a delay device which compensate for the time taken for a portion of the materials to be conveyed from the sensor to the isolating apparatus. The sensor is preferably a differential induction device. The sensor may be rotary in which case it is useful for separating finely crushed or powdery materials.

3,702,134
OVERFLOW-TYPE FLOATING SKIMMER
John L. Henning, Jr., and Warren J. Robicheaux, Port Arthur, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.
Filed Dec. 30, 1970, Ser. No. 102,798
Int. Cl. C02b *9/02*
U.S. Cl. 210—242 **12 Claims**

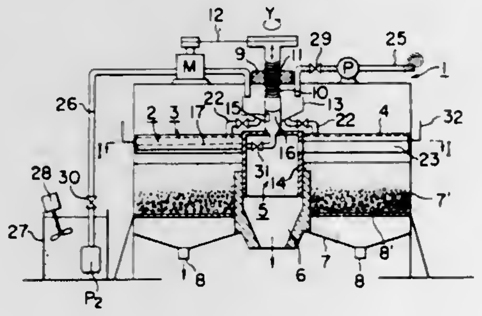


Apparatus for skimming oil from the surface of water in which oil overflowing a weir drains into an overflow conduit joined to a counterbalancing duct. A float supports the juncture of the overflow conduit and counterbalancing duct at a substantially constant position relative to the liquid level. A drain line is connected to the counterbalancing arm whereby a difference in the rate at which liquid flows through the overflow conduit and the drain line causes a change in the liquid level in the counterbalancing duct. A change in volume of liquid in the counterbalancing arm rotates the overflow conduit to change the level of the weir and thereby adjust the flow through the overflow conduit to approximately that through the drain line. A float secured to the counterbalancing duct stabilizes operation of the apparatus.

3,702,135

FILTRATION APPARATUS FOR USE IN TREATING SLUDGE

Shiro Takahashi and Tadao Horiguchi, Yokohama, Japan, assignors to Kurita Water Industries Ltd., Higashe-ku, Osaka-shi, Japan
Filed Feb. 12, 1971, Ser. No. 114,904
Claims priority, application Japan, Feb. 16, 1970, 45/13,288
Int. Cl. B01d *23/20*
U.S. Cl. 210—270 **7 Claims**

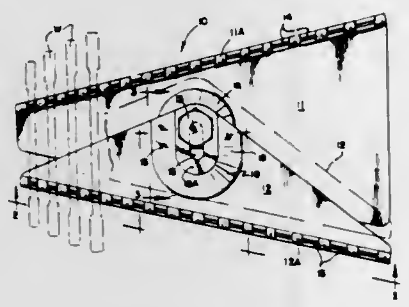


A method of treating sludge comprising the steps of dehydrating the sludge arising from the treatment of water, waste liquid, etc., by spreading it on a filter material and raking off the dehydrated sludge together with the surface layer of said filter material, and an apparatus pertaining to said method.

3,702,136

WRENCH HOLDER

Nathan E. Albertson, 221 Greenwood, Junction City, Oreg. 97448
Filed Mar. 3, 1971, Ser. No. 120,527
Int. Cl. B25h *3/04*
U.S. Cl. 211—60 T **2 Claims**

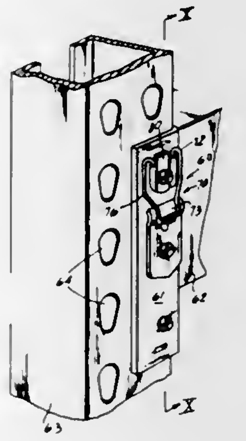


A holder for hand wrenches usable within a tool box or chest to position the wrenches progressively according to their size. The wrenches are held in place upon diverging supports having opposed recesses formed therein engageable with the tool adjacent the ends thereof. One form of the holder provides for both slidable and rotational movement between the supports to accommodate various wrench sizes.

3,702,137

LATCHING MECHANISM

Robert J. Evans, Aurora, Ill., assignor to Aurora Equipment Co., Aurora, Ill.
Continuation-in-part of application Ser. No. 849,427, Aug. 12, 1969. This application June 4, 1970, Ser. No. 43,514
Int. Cl. A47f *5/107*
U.S. Cl. 211—176 **15 Claims**



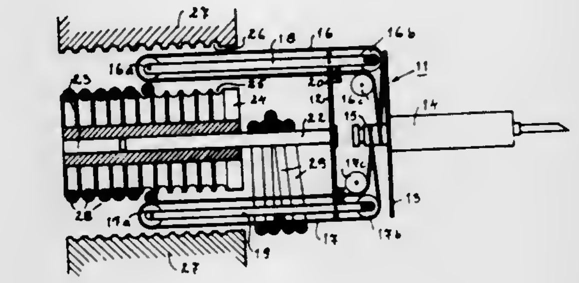
A latching mechanism adapted to adjustably and releasably connect two supporting members of a structure such as a pallet rack. The latching mechanism includes one structural member having headed connecting elements spaced therealong and another structural member having spaced slots or apertures having a wide portion for receiving the headed connecting element and a narrow portion preventing the removal of the connecting element once they are inserted therein. To prevent the accidental disengagement of the headed connecting element from the slot, a safety locking means is provided and comprises a locking finger or projection of a locking member which is mounted by a bracket for movement into and out of a position with the locking finger or projection extending into the wide portion of one of the slots to prevent movement of the connecting elements into that portion. To prevent accidental movement of the locking member, two embodiments of the device provide an irregular cross-section to form a cam portion engaged by a resilient portion of the mounting bracket which portions coact with each other to oppose movement of the locking member to withdraw the locking finger. In the other embodiment illustrated, the mounting bracket has a detent which is received in a groove on the locking member when the finger is in a locking position but during movement of the locking member from the locking position, the detent engages the locking member to oppose rotation thereof.

3,702,138

APPARATUS FOR REMOVING RUBBER RINGS FROM A MOLD

Set Ingvar Abrahamsson, Ringvagen 16, and Per Helge Perssons, Fanestadsvagen 6, both of Forsheda, Sweden
Filed Mar. 31, 1971, Ser. No. 141,924
Claims priority, application Sweden, Mar. 31, 1970, 4,327/70
Int. Cl. B29h *7/00*
U.S. Cl. 214—1 R **6 Claims**

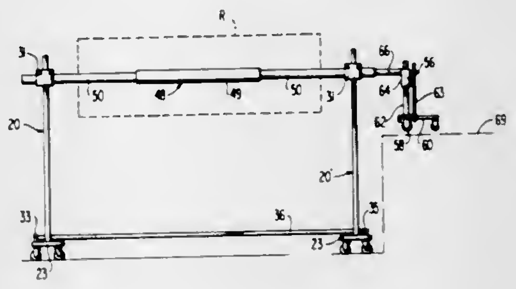
An arrangement for removing rubber rings from semicircular grooves machined in the outside surface of a mold core. After the rings are molded in the grooves and the mold opened, a ring removal mechanism is advanced towards the core for dislodging and removing each ring from the position in which it was molded in a core groove. The mechanism includes a base supporting a motor which drives a pair of endless rubber belts respectively mounted on arms located on opposite sides of the core. As the mechanism is moved inwardly into a ring engaging position, the motor driven belts contact each ring sequentially and because of the friction established between the linearly moving belt and each ring the ring is caused to be rolled out of its groove and onto a stationary bar for subsequent removal from the mold apparatus.



3,702,139

APPARATUS FOR HANDLING CARPET ROLLS

Chester C. Chaffin, 527 S. 4th W., Missoula, Mont. 59801
Filed Oct. 5, 1971, Ser. No. 186,712
Int. Cl. B60p *1/64*
U.S. Cl. 214—38 C **11 Claims**



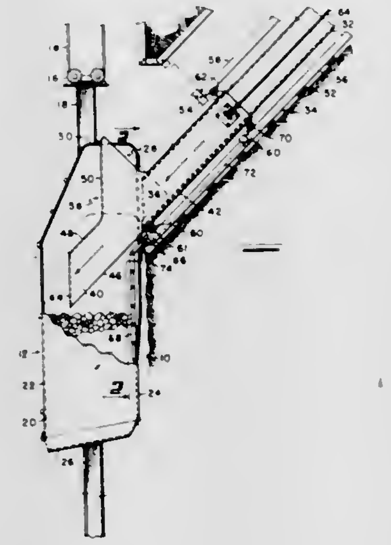
An apparatus for lifting, transporting and racking heavy rolls of carpet embodies a pair of cooperating mobile jack units with extra height extensions, a third foreshortened mobile jack, a pair of carpet roll stands and an extension pole which receives the core of the carpet roll directly. The apparatus components coact to facilitate the lifting and moving of carpet rolls in stores and warehouses, the loading and unloading of rolls from trucks and the placement of rolls on elevated wall racks in stores.

3,702,140

MINE SKIP LOADING APPARATUS

William M. O'Connor, Westport, Conn., assignor to Avco Corporation, Stratford, Conn.
Filed Feb. 22, 1971, Ser. No. 117,636
Int. Cl. B65g *11/14*
U.S. Cl. 214—622 **9 Claims**

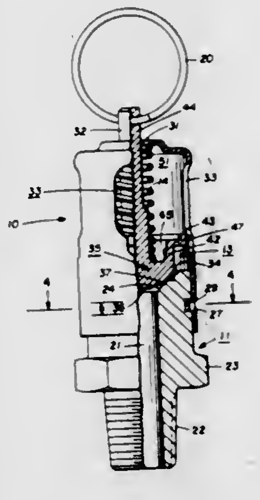
The disclosure illustrates apparatus for loading ore into a cable-supported ore-carrying mine skip. A deflector assembly is telescoped over the end of a chute containing ore to be loaded into the mine skip. The deflector assembly is displaceable from a position where it blocks flow of ore from the chute to a loading position wherein it projects into the path of travel of the mine skip. It then permits flow of ore into the skip while at the same time deflecting the ore toward the bottom to minimize the impact of material on the side walls. At the same time, a barrier in the form of a chainlike curtain is guided into the mine skip for loading to absorb the impact of ore that rebounds from the deflector assembly.



3,702,141

GAS TYPE SAFETY VALVE

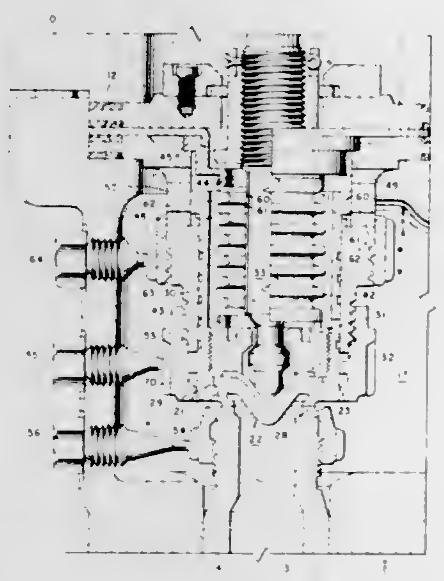
Richard H. Wetterborn, Fairfield, Conn., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Feb. 22, 1971, Ser. No. 117,480
Int. Cl. F16k *17/30*
U.S. Cl. 137—469 **14 Claims**



A gas type safety valve having controlled force lift characteristics. Discharge ports of predetermined area configuration provide effective discharge pressure drops that are caused to vary as a function of operating set pressure. Varying the discharge pressure drop in this manner utilizes a balance of dynamic flow forces for achieving a pressure controlled blowdown. Operative pressure ranges of individual spring components previously characterized by limited range suitability are thereby extended over a wide range of set pressures and spring rates.

3,702,142
SAFETY VALVE HAVING BACK PRESSURE COMPENSATOR

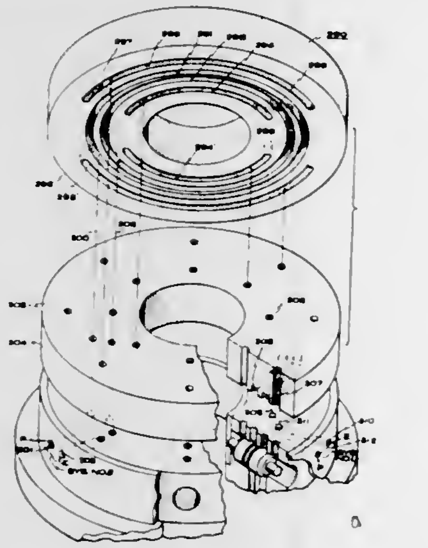
John W. Richardson, Colfax, La., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed July 27, 1970, Ser. No. 59,782
Int. Cl. F16k *17/04*
U.S. Cl. 137—472 **14 Claims**



A safety valve capable of offsettably compensating the adverse operating effects of back pressure associated with valve installation. At full lift, a controlled annular venting about the raised valve disc provides an upward thrust of effective magnitude greater than the downward force being exerted by back pressure. The degree of offset compensation is adjustable to suit operating conditions.

3,702,143
KIDNEY VALVE FOR FLUID MOTOR AND OTHER USES

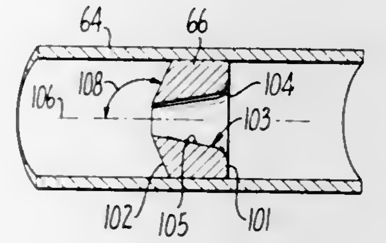
Norman L. Van Wagenen, 378 E. Truman Ave., Salt Lake City, Utah 84115, and Ara Norman Lamph, 540 North 200 East, Bountiful, Utah 84010
Continuation-in-part of abandoned application Ser. No. 740,414, May 23, 1968, which is a division of application Ser. No. 607,428, Jan. 5, 1967, now Patent No. 3,420,059. This application Aug. 30, 1971, Ser. No. 175,853
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.21 **13 Claims**



A fluid control system comprising a kidney valve formed with a pair of concentric recesses and a plurality of semicircular recesses disposed in opposing relation and connected to respective ones of said circular recessses. Two forms of said valve are disclosed.

3,702,144
ORIFICE STRUCTURE HAVING TWO DIFFERENT FLOW RATES

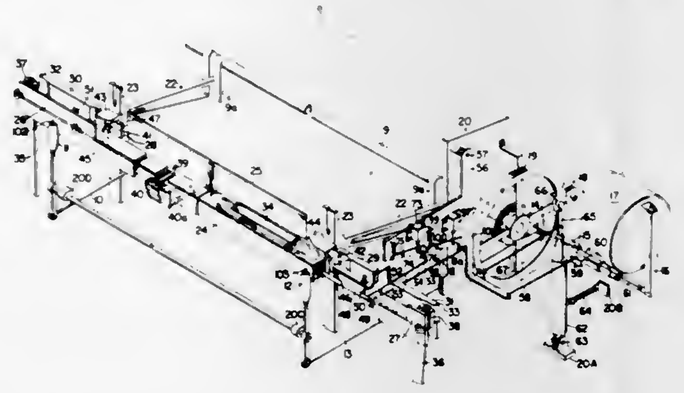
Malcolm W. Loveland, Orinda, Calif., assignor to Atlas Pacific Engineering Company
Filed Oct. 6, 1970, Ser. No. 78,502
Int. Cl. F15d *1/02*
U.S. Cl. 138—44 **1 Claim**



This invention relates to a novel form of orifice structure providing a high rate of flow in one direction and a reduced rate of flow in the opposite direction under the same conditions.

3,702,145
PROTECTION AND CONTROL MEANS FOR FLY-SHUTTLE LOOMS

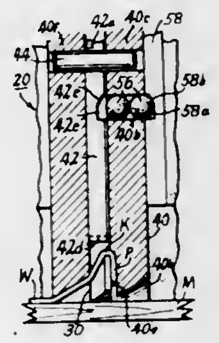
Edgar P. Turner, Watchung, N.J., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Original application Nov. 19, 1965, Ser. No. 508,745, now Patent No. 3,626,992, dated Dec. 14, 1971. Divided and this application July 20, 1971, Ser. No. 164,387
Int. Cl. D03d *51/00*
U.S. Cl. 139—336 **10 Claims**



The invention disclosed herein relates in general to improvements in automatic and manual stopping of fly-shuttle looms. The invention discloses a mechanical means for detecting late shuttle arrival at the throat of the receiving box and associated linkage for quickly stopping the loom shocklessly. This system is operated by the linkage automatically tripping a quick-disconnect element unless a sensor in the path of the fly shuttle is displaced at the proper time. It also discloses linkage associated with a standard filler break detector of the same type as and in combination with the late shuttle detection system, to quickly and shocklessly stop the loom upon thread breakage. Also disclosed is a hydraulic and spring-operated energy absorption apparatus to aid the loom's normal braking system when a stop is desired. By means of a novel linkage, this apparatus is caused to engage the loom's flywheel upon either a manual or automatic stop signal being given. Additionally, the disclosure teaches a system for insuring that on manual stops the loom will always stop at the same position in its cycle. This system is disclosed as either using the linkage of the first two stopping means or a similar system. There is also disclosed an electrical system for providing controlled loom stoppage in the event of an electrical power failure.

3,702,146
PRONG FORMING AND DRIVING MECHANISM

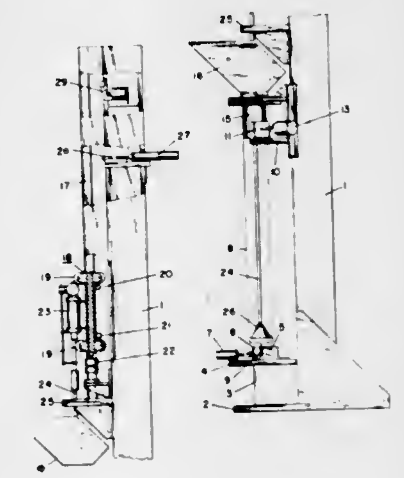
Leroy M. Varga, Dover, and Thomas L. Voorhees, Morris Plains, N.J., assignors to Rockaway Corporation, Rockaway, N.J.
Filed May 17, 1971, Ser. No. 143,760
Int. Cl. B21f *45/00*
U.S. Cl. 140—93 C **6 Claims**



Prong forming and driving mechanism for particular use in a machine for forming loop fasteners on wire-bound containers, having a loop bar with a hook-like extension at its lower end, a former bar for engaging the end portion of a binding wire projecting beyond the hook-like extension and bending it downwardly to form a prong which is supported on its inside by the hook-like extension and on the other three sides by the walls of a groove in the former bar, and a driver bar which drives the prong through the face material of a box blank while camming the hook-like extension progressively out of the way, with latching means for automatically latching and unlatching the former bar to the driver bar at appropriate stages of the cycle, so that the entire mechanism can be driven by a single vertically reciprocable crossbar in a conventional loop fastener machine.

3,702,147
PACKING APPARATUS AND METHOD

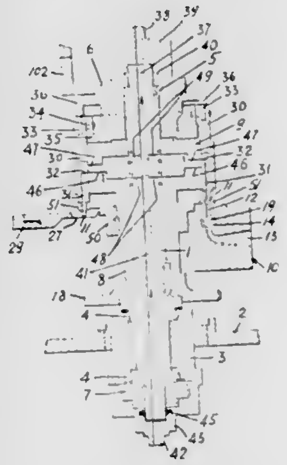
Frank E. Slawinski, Tamaqua, Pa., assignor to ICI America Inc., Wilmington, Del.
Filed May 14, 1971, Ser. No. 143,490
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—12 **18 Claims**



An apparatus for packing a material in an upright container. A vibrating tamp stick is mounted on a carriage which can move in opposition to the container against a uniform force. As the tamp stick vibrates, material flows around its tip and is packed by it, forcing the carriage and the container to gradually separate until the container is completely packed.

3,702,148
MACHINE FOR THE DEPOSITION OF MEASURED AMOUNTS OF SOFTENED THERMOPLASTIC MATERIAL INTO CLOSURE CAPS

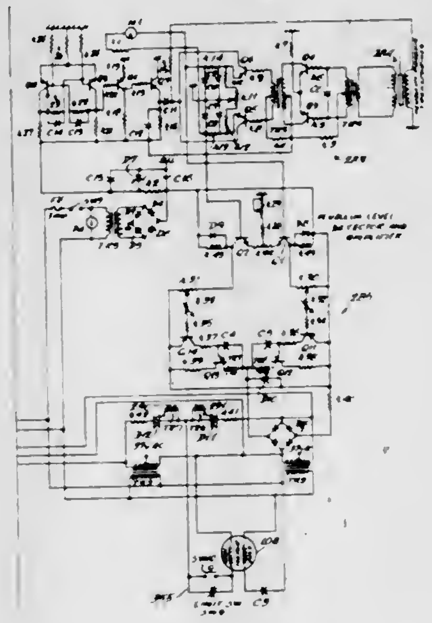
Ettore Busi, 191 Via Selice, Imola, Italy
Filed Sept. 9, 1970, Ser. No. 70,719
Claims priority, application Italy, Sept. 16, 1969, 7,317/69
Int. Cl. B65b *3/10*
U.S. Cl. 141—67 **7 Claims**



This invention relates to a machine for depositing measured amounts of softened thermoplastic materials into closure caps to provide linings in the caps. This machine includes a metering and a delivering device for viscous or softened plastics lumps, and a suction gripper mounted for cyclic movement along a closed path and arranged for connection to a vacuum pipe for reception of one of the plastics lumps delivered by said metering device and for subsequent connection to a blast air pipe for discharging the plastics lump into a closure cap.

3,702,149
LANE RESURFACE LEVEL CONTROL INCLUDING A VARIABLE DEADBAND MOTOR CONTROL

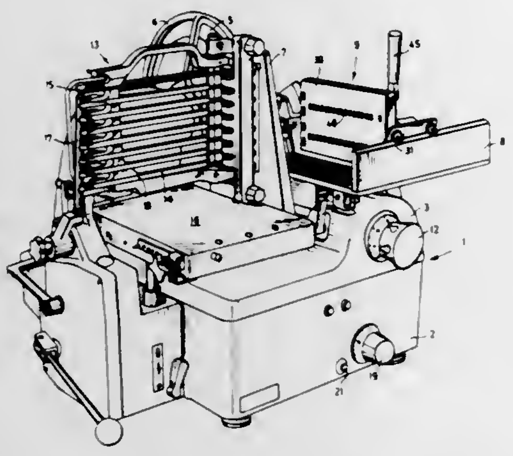
Robert C. Thompson, Muskegon, Mich., assignor to Brunswick Corporation
Filed Dec. 23, 1969, Ser. No. 887,554
Int. Cl. B27c *1/02*
U.S. Cl. 144—117 C **4 Claims**



A lane resurfacer and control provided with circuitry for driving the lane resurfacer down the lane from the foul line provided with automatic controls for maintaining the proper cutter level during the forward travel of the lane resurfacer toward the pit having a variable deadband circuit for minimizing hunting.

3,702,150
SLICING MACHINE AND CLAMPING DEVICE THEREFOR

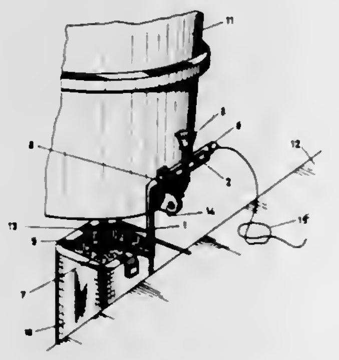
Ernst Müller and Albrecht Maurer, Balingen, Germany, assignors to Bizerba-Werke Wilhelm Kraut KG, Balingen, Wurttemberg, Germany
Filed Dec. 14, 1970, Ser. No. 97,920
Claims priority, application Germany, Dec. 13, 1969, P 19 62 666.5
Int. Cl. B26d *4/00*
U.S. Cl. 146—102 R **2 Claims**



A slicing machine has a rotating circular blade mounted on a machine housing. Carriage means are mounted on the machine housing for holding a material to be sliced adjacent the blade and for reciprocating movement in a direction parallel to the plane of the blade. A clamping device is mounted on the carriage means for holding a material to be sliced. This clamping means has a pivotally mounted holder provided with gripper pins arranged on a side facing the carriage to selectively hold long pieces of material to be sliced, and has a plurality of gripper hooks retractably mounted on a side of the holder facing the plane of the blade to selectively hold short pieces of materials to be sliced. When long pieces are held, the holder rests on top of the piece of material to be sliced, and when short pieces of material are held the holder rests flush against the carriage and abuts an end surface of the material.

3,702,151
METHOD FOR DEOXIDIZING EFFERVESCENT STEEL

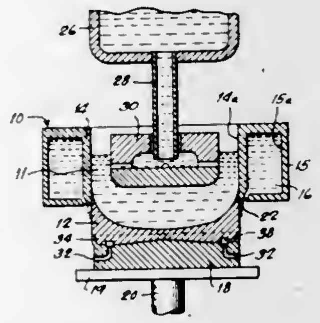
Jan F. de Blok, Beverwijk, and Leonard Jansse, Ijmuiden, Netherlands, assignors to Koninklijke Nederlandsche Hoogovens en Staalfabrieken N.V.
Filed June 18, 1970, Ser. No. 47,313
Claims priority, application Netherlands, June 23, 1969, 6909598
Int. Cl. B22d *27/18, 27/20;* **C21c** *7/06*
U.S. Cl. 164—57 **4 Claims**



A method for deoxidizing effervescent steel, in which a deoxidizing powder such as aluminum is injected into the casting stream from a ladle into a casting mold. The grain size of the powder is mainly between 40 and 200 microns and the powder is uniformly supplied to the casting stream during at least 70% of the time for filling the mold. In the device there is a cooling jacket around the discharge end for the powder. The powder is blown by air in a metered quantity.

3,702,152
PROCEDURES AND APPARATUS FOR CONTINUOUS CASTING OF METAL INGOTS

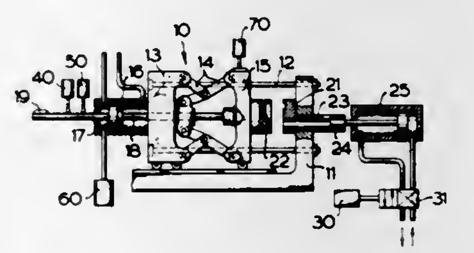
Neil Burton Bryson, Kingston, Ontario, Canada, assignor to Alcan Research and Development Limited, Montreal, Quebec, Canada
Filed Mar. 22, 1971, Ser. No. 126,532
Int. Cl. B22d *11/00*
U.S. Cl. 164—89 **6 Claims**



In continuous casting of metal ingots by delivering molten metal to an open-ended mold while withdrawing cast ingot continuously from the open mold end and while directing liquid coolant onto the ingot surface emerging from the mold, the extremity of the ingot is supported by a stool that initially closes the mold open end and moves progressively away from the mold as the ingot is cast. The stool is provided with plural drainage passages loosely closed with plugs positioned to be frozen into the butt of the ingot. Contraction of the solidifying butt pulls the plugs out of the drainage passages sufficiently to permit discharge through the passages of fluid collecting between the ingot butt and the stool.

3,702,153
SAFETY DEVICE FOR DIE CASTING MACHINES

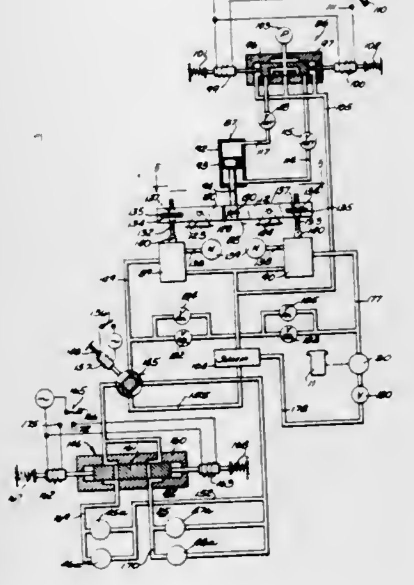
Rolf Frey, Winterbach, Germany, assignor to Mahle-Werk G.m.b.H., Fellbach, Germany
Filed July 6, 1971, Ser. No. 159,995
Int. Cl. B22c *19/04;* **B22d** *17/32*
U.S. Cl. 164—153 **1 Claim**



A safety device in a die casting machine has a mold-holding press constructed as a toggle joint press with a hydraulic drive, and in which the feeding of the casting material from the pressure chamber into the mold cavity is initiated by an electric switch element. In the control circuit of the switch element various switches, responding to the position of the hydraulic drive or to a minimum pressure prevailing therein, are arranged in series in such a way that the switch element that initiates the casting process responds only when the drive system has assumed its position of closure and the two mold halves are firmly pressed against each other.

3,702,154
CONTINUOUS CASTING MACHINE RECIPROCATION AND WITHDRAWAL CONTROL SYSTEM

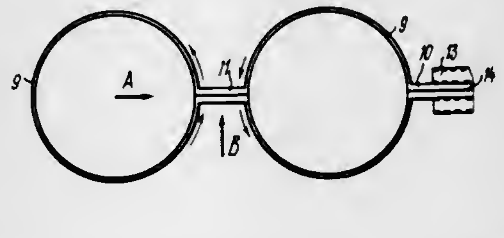
Joseph Rokop and Geoffrey W. Hughes, Bethel Park, Pa., assignors to Pennsylvania Engineering Corporation
Filed Sept. 3, 1970, Ser. No. 69,361
Int. Cl. B22d *11/12, 17/32*
U.S. Cl. 164—154 **9 Claims**



A continuous casting machine having a flow through mold, hydraulically driven withdrawal rollers for withdrawing a molded strand from the mold, and hydraulically driven mold reciprocating means for oscillating the mold in a direction parallel with that of strand withdrawal to insure separation of the strand therefrom during withdrawal. The withdrawal speed is selectively adjustable to correspond to the metal pouring rate and control means effects simultaneous changes in the speed of the oscillating mechanism according to a preselected proportionally constant.

3,702,155
APPARATUS FOR SHAPING INGOTS DURING CONTINUOUS AND SEMI-CONTINUOUS CASTING OF METALS

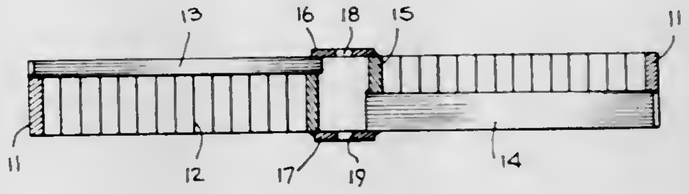
Zinovy Naumovich Getselev, Kuibyshev, U.S.S.R., assignor to Kuibyshevsky Metallurigchesky zavod im. V.I. Lenina, Kuibyshev, U.S.S.R.
Filed Dec. 9, 1970, Ser. No. 96,525
Int. Cl. B22d *27/02*
U.S. Cl. 164—251 **4 Claims**



An apparatus for shaping ingots in the process of continuous and semi-continuous casting of metals provided with a device for feeding a molten metal onto a dummy bar in each of the arrangements which includes a cooled inductor for shaping a liquid portion of the ingot and a collector with a shield for cooling liquids directed onto the side surfaces of the ingot being shaped. The inductors of the above-mentioned arrangements are connected in series through jumpers, each of which is made of two bars insulated one from another, in which case these jumpers and current-carrying bars are inclined downwards from the inductors. The latter are made smoothly decreasing in height in the direction of each jumper and current-carrying bar.

3,702,156
AIR-TO-AIR ENERGY EXCHANGE WHEEL AND METHOD OF FABRICATION

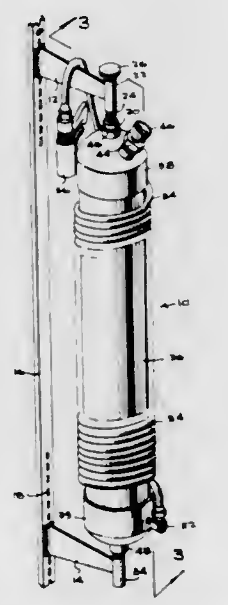
Marvin K. Rohrs, Fanwood, and Robert J. Neary, Westfield, N.J., assignors to Aero-Flow Dynamics, Inc. (The Wing Company Division), Linden, N.J.
Filed Dec. 3, 1970, Ser. No. 94,910
Int. Cl. F28d *19/04*
U.S. Cl. 165—10 **15 Claims**



Alternating flat and corrugated ribbons of metal or other foil are wrapped continuously in a spiral around a central hub. When the appropriate diameter is attained the outer periphery is secured by a rim having an axial dimension equal to the axial dimension of the spiral wrapping. Angularly spaced metal spokes are inset in grooves in opposite faces of the wheel flush with such faces. The spokes on one side of the wheel are of substantial axial dimension for structural strength and are secured both to the rim and to the hub. Thinner spokes located on the opposite face of the wheel are generally permitted to float at one or both ends, although under certain circumstances both ends may be secured.

3,702,157
FIRE EXTINGUISHER

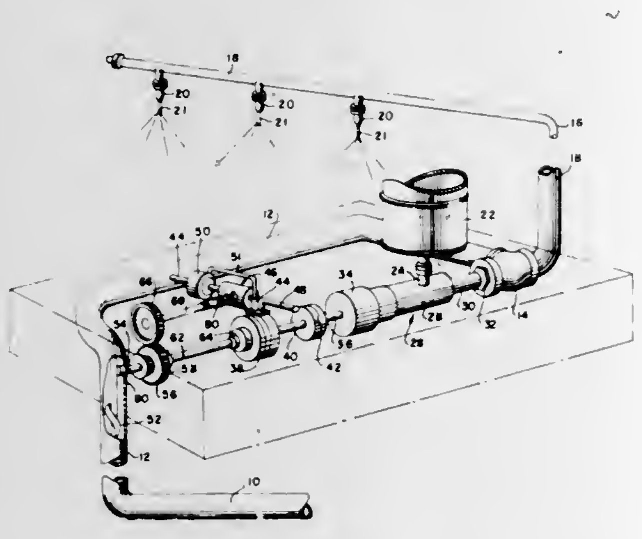
Walter C. Thomas, P.O. Box 22, Rte. 3, Fort Myers, Fla. 33901
Filed Sept. 20, 1971, Ser. No. 181,889
Int. Cl. A62c
U.S. Cl. 169—1 R **10 Claims**



A fire extinguisher having a polyvinyl pipe closed on each end by polyvinyl caps and pressurized with gas and dry fire extinguisher material on its interior and having a dispensing hose connected to one end and coiled about the pipe with the pipe being supported by spring biased detent means and a fixed detent means respectively received in axially aligned recesses in each end of the extinguisher for supporting the extinguisher but permitting reel-like rotation of the extinguisher as the hose is removed or for permitting easy manual removal of the entire extinguisher from the supporting means.

3,702,158
FIXED FIRE EXTINGUISHING SYSTEM USING DELAYED ADDITIVE INJECTION

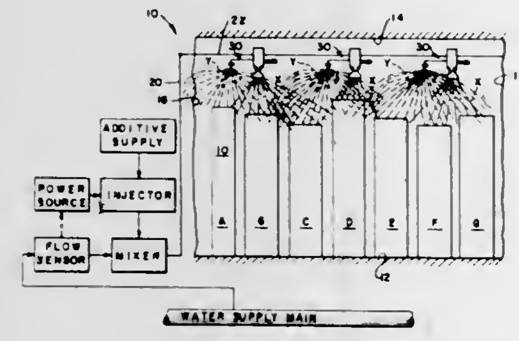
William L. Livingston, Sharon, Mass., and Carl Marshall Munson, North Scituate, R.I., assignors to Factory Mutual Research Corporation, Norwood, Mass.
Filed June 1, 1971, Ser. No. 148,778
Int. Cl. A62c *35/00*
U.S. Cl. 169—15 10 Claims



A fixed fire extinguishing system in which one or more discharge heads are adapted to be actuated in response to a fire condition to disperse a fluid supplied thereto by a fluid flow line. After a predetermined amount of fluid is discharged through the heads, an injector introduces an additive to the line in proportion to the fluid flow through the line to improve the fire fighting characteristics of the fluid.

3,702,159
FIRE PROTECTION SYSTEM UTILIZING DIRECT DISCHARGE NOZZLES AND FILL-IN SPRINKLER HEADS

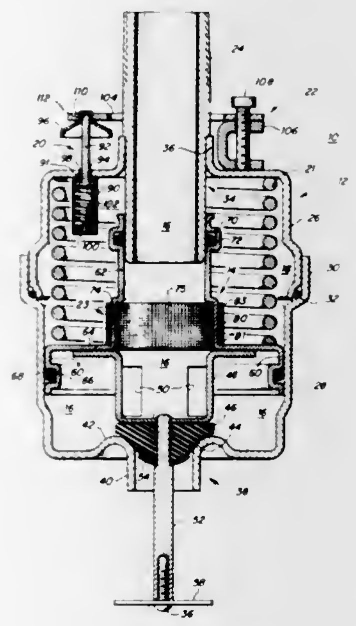
William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.
Continuation-in-part of application Ser. No. 148,480, June 1, 1971. This application Oct. 19, 1971, Ser. No. 190,552
Int. Cl. A62c *35/00*
U.S. Cl. 169—5 40 Claims



A fire protection system for buildings and the like wherein a plurality of extinguishant discharge heads are mounted in the building and are connected to a source of extinguishant. Each head has a direct discharge nozzle and a sprinkler head for discharging a continuous supply of extinguishant across the area to be protected.

3,702,160
SUPPRESSOR DEVICE FOR AUTOMATIC ON-OFF SPRINKLER HEAD

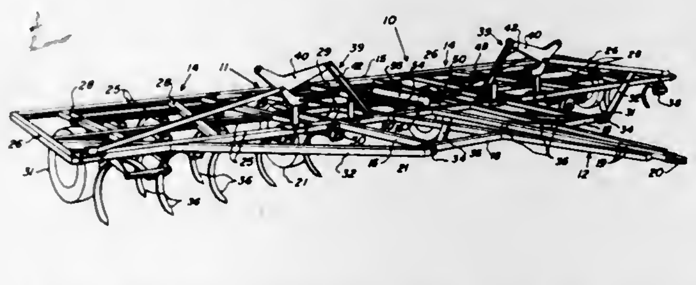
Wilfred J. Grenier, Rutland, Mass., assignor to General Industries, Inc., Rutland, Mass.
Filed May 28, 1971, Ser. No. 147,869
Int. Cl. A62c *37/06*
U.S. Cl. 169—20 24 Claims



A suppressor device for a sprinkler head having a control chamber and a primary chamber interconnected by a passage including a unidirectional valve member for permitting flow through the passage from the primary chamber to the control chamber when the pressure in the primary chamber exceeds that in the control chamber and preventing flow in the other direction through the passage from the control chamber to the primary chamber when the pressure in the control chamber exceeds that in the primary chamber.

3,702,161
WING LIFT LINKAGE

Ralph K. Zachary and John F. Luoma, Lisbon, N. Dak., assignors to Clark Equipment Company, Buchanan, Mich.
Filed June 29, 1971, Ser. No. 157,978
Int. Cl. A01b *49/00, 63/00*
U.S. Cl. 172—311 18 Claims

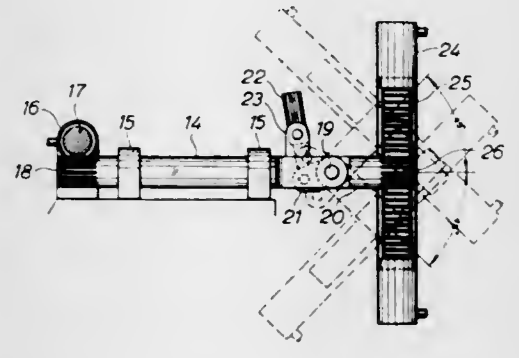


A multi-section implement having an improved lift mechanism for raising at least one of said sections from a lowered field position to a raised transport position, said improved lift mechanism including a bellcrank pivotally secured to said section to be raised, means for guiding

one end of said bellcrank for predetermined movement, and actuating means connected with a second end of said bellcrank for moving said bellcrank and thereby raising said section to be raised, whereby a mechanical advantage is realized in terms of force necessary to raise said section and movement of said actuating means.

3,702,162
ADJUSTABLE SUPPORT FOR RING DRILLING

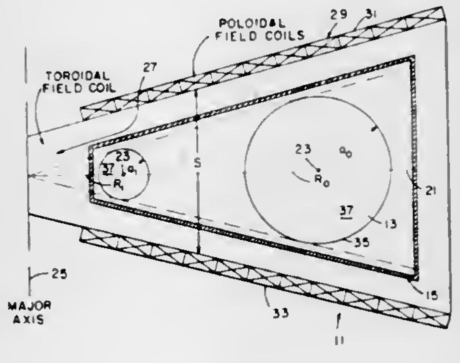
Teuvo Gronfors, Tampere, Finland, assignor to Oy Tampella AB, Tampere, Finland
Filed Dec. 15, 1970, Ser. No. 98,380
Claims priority, application Finland, Oct. 19, 1970, 2,811
Int. Cl. E21c *11/02*
U.S. Cl. 173—43 3 Claims



The present invention concerns a ring drilling device adapted for operating in a tunnel and comprising a boom rotating about its longitudinal axis and to which is attached a cradle transverse thereto for the feeding device for the rock drill. On the rotatable boom, there is mounted a boom head turnable about an axis perpendicular to said boom, the cradle being mounted on this turnable boom head to be rotatable about is longitudinal axis.

3,702,163
DEVICE FOR COMPRESSION HEATING OF TOKAMAK DISCHARGES

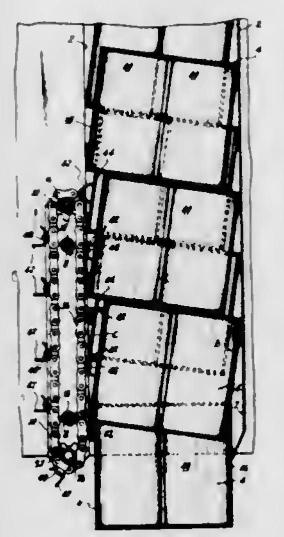
Harold P. Furth and Shoichi Yoshikawa, Princeton, N.J., assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed Apr. 15, 1970, Ser. No. 28,890
Int. Cl. G21b *1/00*
U.S. Cl. 176—3 6 Claims



An apparatus is disclosed for heating and compressing a toroidal plasma column. The apparatus comprises a toroidal evacuated container, having annular toroidal and poloidal coils centered on the major axis. Interacting fields produce an inward compression of the plasma column toward the major axis characterized by a reduction in the major and minor radii of the plasma column.

3,702,164
CHAIN CONTROLLED VENDER FOR STACKED ARTICLES

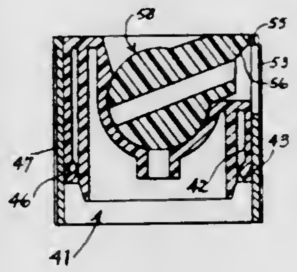
Kenneth W. Oden, Charles Town, W. Va., assignor to Dixie-Narco, Inc., Charles Town, W. Va.
Filed Mar. 18, 1971, Ser. No. 125,728
Int. Cl. B65b *3/30*
U.S. Cl. 221—77 8 Claims



A pair of open-bottom guide channels in a cabinet hold adjacent columns of articles, the channels being dimensioned so the articles can tilt in one direction therein. Endless chains extend along only the bottom portions of the channels and have lugs engaging one bottom edge of only the lowermost article in each column, supporting the entire column by that one article, with all articles tilted. As the chains are actuated the columns are lowered until the bottom article is discharged and the column drops onto the next lug. The lugs on the two chains are vertically staggered to discharge articles from one column then the other, alternately. The endless chain assemblies are removable as a unit from the cabinet, for service or repair.

3,702,165
CHILD-PROOF DISPENSING CLOSURES

Robert N. Carow, Barrington, and Sidney M. Libit, Glencoe, Ill., assignors to U.S. Cap & Closure Inc., Chicago, Ill.
Filed July 28, 1971, Ser. No. 166,838
Int. Cl. B65d *55/02*
U.S. Cl. 222—153 17 Claims

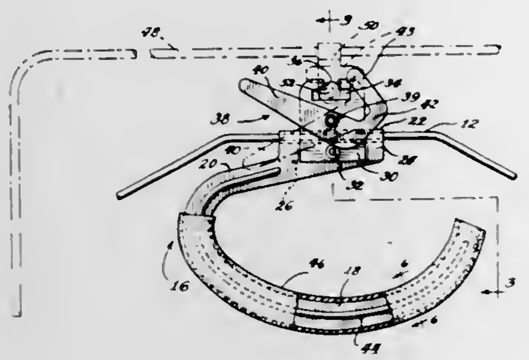


Dispensing closures of the class which include a spout rotatably engaged in a base and movable between open and closed positions. To render the closure proof against being opened by a child of tender years, the closure, in one aspect, is provided with a disc surmounting the spout and adapted to be rotated to position a slot in the disc in or out of register with the spout. When the disc is rotated into register, the spout can be swivelled to dispensing position and vice versa. In another aspect, the disc has a notch into which the spout may be introduced to lock the disc against rotation. In yet another aspect, the spout is rendered inaccessible unless a spout-lifting finger on a rotatable sleeve is moved into alignment with the spout.

3,702,166

GARMENT HANGER

Max L. Jaffe, Glencoe, Ill.
(1240 N. Homan Ave., Chicago, Ill. 60647)
Filed Jan. 21, 1971, Ser. No. 108,357
Int. Cl. A47j *51/098*
U.S. Cl. 223—85 **1 Claim**

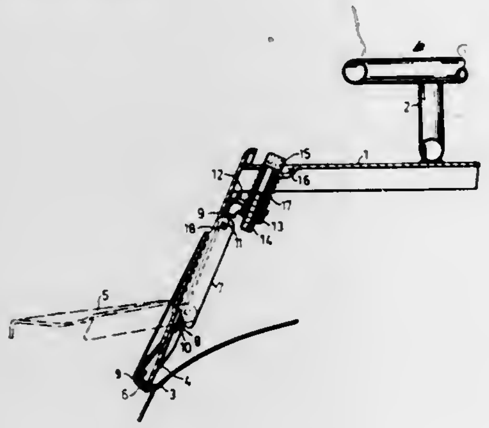


A garment hanger provided with a top horizontal portion and a handle which is manually rotatable about the longitudinal axis of the top horizontal portion. Said handle supports a latching plate and a latching arm whereby the hanger may be detachably secured to a support member in a suitcase or the like when the handle is rotated to position the latching plate and latching arm above the garment hanger. The handle may be rotated about the longitudinal axis of the top horizontal portion of the garment hanger to position the handle above the top of the garment hanger so that it may be readily carried or may be supported in a garment carrying bag. The handle is shaped to provide a large arc or a large radius so that the four fingers of a person's hand can engage same and be curled around it to provide a firm and convenient hand support.

3,702,167

ATTACHMENT FOR FASTENING A LUGGAGE RACK INTO THE DRIP MOULDING OF AN AUTOMOBILE

Lars-Olov Roland Olson, Trollhattan, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden
Filed Jan. 18, 1971, Ser. No. 107,280
Claims priority, application Sweden, Jan. 23, 1970, 842/70
Int. Cl. B60r *9/04*
U.S. Cl. 224—42.1 E **3 Claims**

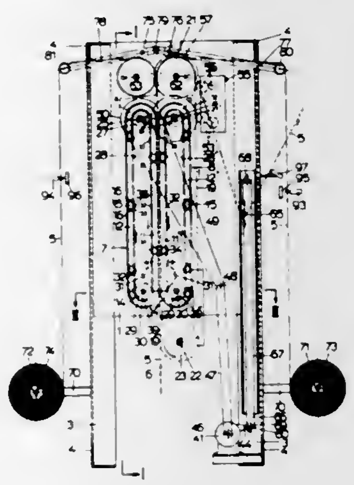


The present invention relates to an attachment for fastening a luggage rack in the drip moulding of an automobile. The attachment is designed to be easily set on and removed, and the risk of it losing its grip around the drip moulding is lessened. To this end, the attachment has a clamp provided with a locking hook arranged to co-operate with an upright slide in communication with a support. The slide is tightenable in a direction upwards away from the drip moulding in engagement with the locking hook so that the support and the clamp are squeezed firmly like tongs around the drip moulding.

3,702,168

CONTINUOUS WEB FEEDING APPARATUS

Dirk Godfried Johannes Roos, Amsterdam, Netherlands, assignor to Trans-Atlas A.G., Amsterdam, Netherlands
Filed Feb. 16, 1971, Ser. No. 115,351
Claims priority, application Netherlands, Feb. 16, 1970, 7002157
Int. Cl. B65h *17/34*
U.S. Cl. 226—110 **9 Claims**



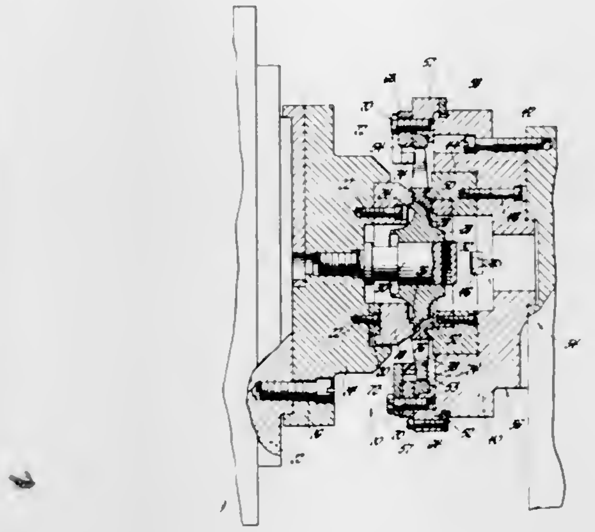
A machine for making sacks from a double layer web of thermoplastic sheet material by heat sealing and cutting in which the web is fed with continuous movement through the machine by being clamped at regular and adjustable intervals between pairs of driven carrier members extending transversely of the web and containing the web sealing and cutting means. The carrier members are moved around through two closed guide tracks, one on each side of the web travel path, having vertically downwardly extending leading track portions through which the paired web-engaging carrier members are moved downwardly by driving belts or chains clamped between the carrier pairs, and having vertically upwardly extending return track portions through which the carrier members are moved upwardly by means of driven lifting chains provided with projecting cams engaging underneath the carrier members, the speed of the lifting chains being adjustable with respect to the speed of the driving belts or chains.

3,702,169

FRICTION WELDER WITH FLOATING WORKPIECE FIXTURE

Gerald D. Bonneville, Orchard Lake, Adolf Hetke, Livonia, and William N. Free, Dearborn, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 27, 1970, Ser. No. 93,140
Int. Cl. B23k *27/00*
U.S. Cl. 228—2 **4 Claims**

The friction welder has a floating shroud in the tail stock that provides radial support of a workpiece having thin or fragile portions. There is limited shroud rotation relative to the tail stock during the welding process so that torsional forces generated during friction welding will not be transmitted from the workpieces through the shroud to the tail stock. This allows the workpieces to be joined without destruction or damage by the friction welding process. The shroud has a plurality of segments facilitating easy removal of the workpieces from the tail stock.

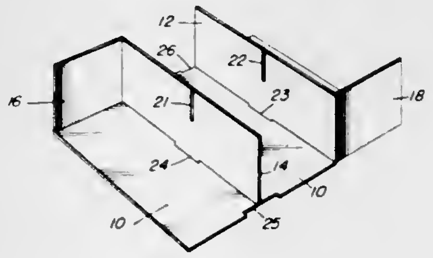


7

3,702,170

COMPARTMENTED PAD

William S. Adams, Runnemede, N.J., assignor to Westvaco Corporation, New York, N.Y.
Filed July 29, 1970, Ser. No. 59,214
Int. Cl. B65d *5/48*
U.S. Cl. 229—15 **9 Claims**



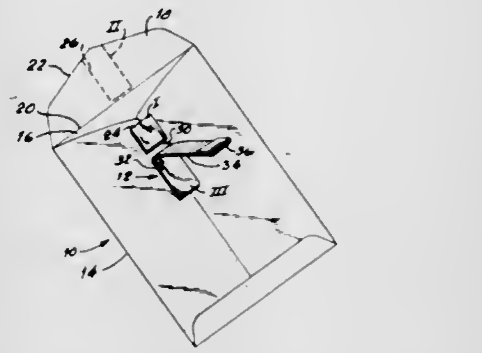
A compartmented pad structure is constructed from a blank of paperboard or the like which is cut and scored to provide a pair of longitudinal partition panels that are foldable upwardly from the edges of the blank into parallel spaced relation. The partition panels include means which cooperate with the remaining blank structure to retain the panels in position, and, provision is made for the addition of at least one other separate panel element for dividing the pad into a greater number of compartments.

3,702,171

ENVELOPE WITH IMPERMANENT CLOSURE

Elliot Levine, 50 Morton St., New York, N.Y. 10014
Filed July 16, 1971, Ser. No. 163,269
Int. Cl. B65d *27/06, 27/16*
U.S. Cl. 229—79 **8 Claims**

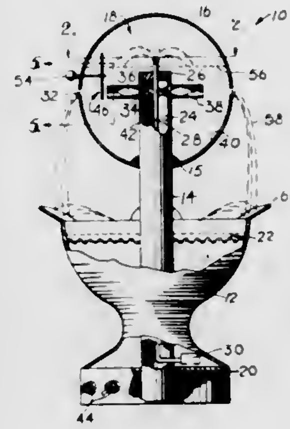
An envelope having a pressure-sensitive tape-type impermanent closure consisting of three tape strips. Each tape strip has an aggressively adhesive side and a low adhesion side. A first and a third of said tape strips are adhered by their aggressively pressure-sensitive adhesive sides to the rear surface of the envelope body in alignment. The first of the tape strips is located under the flap when the flap is closed and runs perpendicular to the hinge connecting the flap to the envelope body, terminating at the position occupied by the free edge of the flap when the flap is closed. The third of the tape strips is located on the rear surface of the envelope body and extends away from the edge of the first strip remote from the flap hinge. The third tape strip has a portion extending from remote edge of the first strip. This portion is not adhesively secured to the back of the envelope body and is referred to as the "free" portion. When the envelope is sold the free portion of the third tape strip is adhesively secured to the low adhesion side of the first strip. A second tape strip which has its aggressively pressure-sensitive adhesive side adhered to the back of the flap is provided. The second strip is in alignment with the said first and third tape strips and may be slightly wider. In use the free portion of the third tape strip is peeled from the low adhesion side of the first strip, then the flap is folded to closed position and finally the free portion is adhered to the low adhesion side of the second strip from which it can be readily peeled at any time that the contents of the envelope are to be inspected. The tip of the free portion has a pull tab thereon neither side of which has a pressure-sensitive adhesive thereon.



3,702,172

LIGHT FOUNTAIN

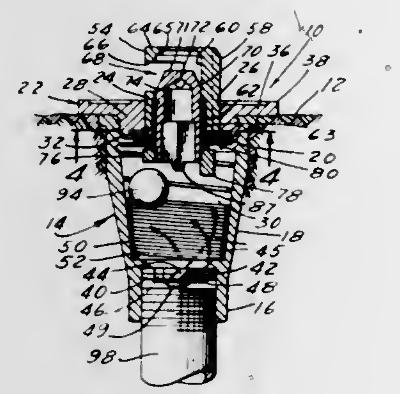
Dale E. Hawkins, 15513 E. 43rd, Independence, Mo. 64055
Filed Sept. 20, 1971, Ser. No. 181,794
Int. Cl. F21p *7/00*
U.S. Cl. 239—18 **13 Claims**



An illuminated, decorative water fountain presenting an attractive visual effect of light cascading from an elevated container of water. The interior of the container is filled with water to an operating level above apertures in the container to present a free flow, cascading discharge of water along an exterior path. A separate light source for each aperture is disposed within the interior of the container to direct light toward the associated aperture at an angle relative to the exterior path in such a manner that the water discharge effects deflection of the light along the exterior path to create a visual appearance of cascading light.

3,702,173
SPRINKLER HEAD

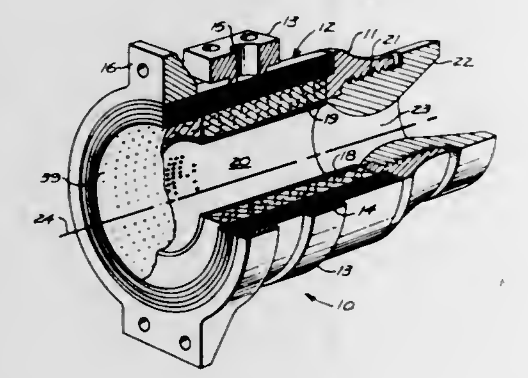
Elmer N. Reynolds, 15915 Arbela Drive,
Whittier, Calif. 90603
Filed Feb. 19, 1971, Ser. No. 116,863
Int. Cl. B05b *15/10*
U.S. Cl. 239—204 **6 Claims**



A sprinkler head comprising a main body housing, having a threaded cap member secured to the upper end thereof, adapted with an opening therein to receive a sleeve member which is slidably disposed within the opening, and a core assembly being adapted to be rotatably secured within the sleeve member, the core assembly being provided with a frictional clutch assembly which includes a plurality of slip rings, a spring and a lock ring when axially aligned within the sleeve member, allowing the core or nozzle member to rotate by means of a ball striking a base portion of the core assembly.

3,702,174
FLUID DISTRIBUTORS AND THRUSTERS

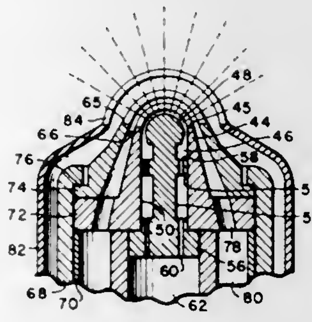
Ronald A. Hankins and Donald W. Culver, Fair Oaks, and Harrison B. Scammon, Jr., Carmichael, Calif., assignors to Aerojet-General Corporation, El Monte, Calif.
Original application Oct. 13, 1969, Ser. No. 865,706. Divided and this application Feb. 18, 1971, Ser. No. 116,402
Int. Cl. B63h *11/00;* **B64d** *33/04*
U.S. Cl. 239—265.11 **7 Claims**



According to the present disclosure, a fluid distributor comprises a stack of a plurality of wafers. Inlet apertures are provided through inlet wafers and are in fluid communication with distribution apertures in a distribution wafer. Outlet apertures are provided in fluid communication with the distribution wafers. Preferably, metering apertures and transfer apertures are provided in serial fluid communication with said distribution apertures between the inlet and outlet apertures. A thruster according to this disclosure may include a first fluid distributor for radially injecting monopropellant into a radial catalyst pack, or a second fluid distributor for axially injecting monopropellant into an axial catalyst pack.

3,702,175
FLAT SPRAY FUEL NOZZLE

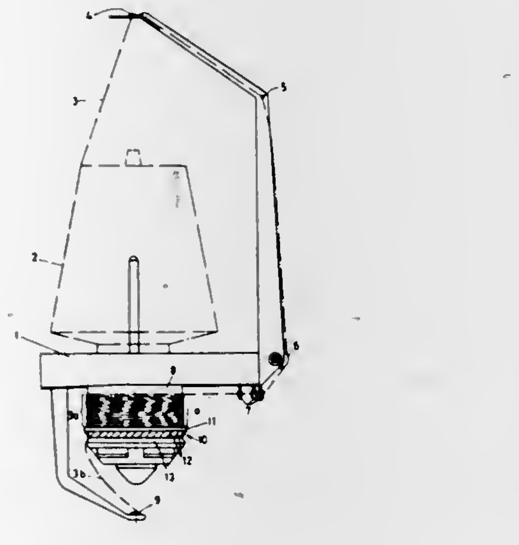
Sidney C. Watkins, Stratford, Conn., assignor to Avco Corporation, Stratford, Conn.
Filed Dec. 4, 1970, Ser. No. 95,193
Int. Cl. F23d *11/16*
U.S. Cl. 239—422 **4 Claims**



The disclosure illustrates a flat spray fuel nozzle comprising, in one form, a spherical chamber having an elongated outlet slot and a sphere in the chamber closely adjacent the slot. Fuel flow through the chamber is divided into two streams which are directed against one another at the inlet of the slot to provide greater turbulence and more efficient atomization. In another form the nozzle uses a bar positioned in front of a straight slot for dividing the flow.

3,702,176
YARN STORING DEVICE

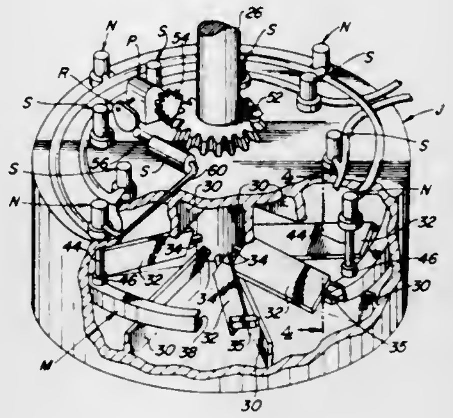
Karl Isac Joel Rosen, Villa Haga,
S-52300 Ulricehamn, Sweden
Filed Jan. 13, 1971, Ser. No. 106,044
Int. Cl. B65h *51/20*
U.S. Cl. 242—47.01 **4 Claims**



Retarding ring for a yarn storage device. An improved retarding ring is provided for a presently known yarn storage device wherein yarn from a source is moved tangentially onto a storage drum and is then drawn axially from the drum. Means are provided on the discharge portion of said drum for retarding the withdrawal of said yarn and thereby providing tension thereon. The present invention consists in an improvement in such retarding ring wherein a ring surrounds and is spaced from the drum and is provided with fingers projecting from the ring and inclined both toward the drum and circumferentially. In the present invention said fingers in one embodiment are curved in such a manner that when the ring is withdrawn from the drum the fingers project into an imaginary cylinder concentric with the ring of a diameter equal to the diameter of the drum. In another embodiment said fingers similarly project into such an imaginary cylinder but then are reversely curved so that their tips are outside of and spaced from such cylinder. In both embodiments this provides an increased zone by which such fingers contact the yarn being withdrawn and thereby apply a more uniform tension thereto than was previously possible.

3,702,177
ADJUSTABLE ROTARY HYDRAULIC BRAKE

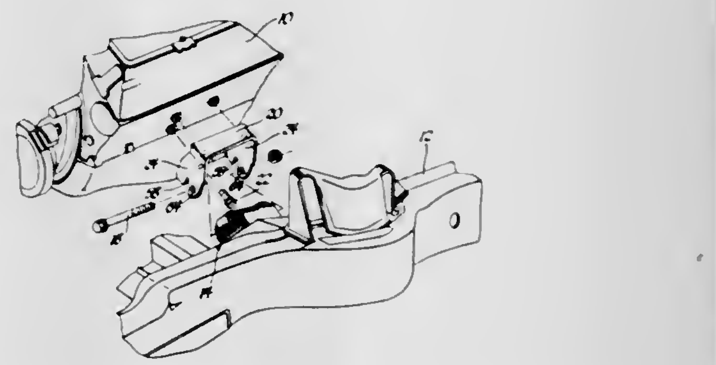
Ignatius John Niemkiewicz, Wilmington, Del., and George H. Reinemuth and Floyd G. Silver, Secane, Pa., assignors to Gulf + Western Industrial Products Company, Grand Rapids, Mich.
Continuation of abandoned application Ser. No. 834,660, June 19, 1969. This application Mar. 15, 1971, Ser. No. 124,518
Int. Cl. B64f *1/02*
U.S. Cl. 244—110 A **4 Claims**



A rotary hydraulic brake includes a rotor having rotor vanes and a stator having stator pockets. Liquid received in the brake housing is acted upon by the vanes and pockets to provide a braking force. The rotor vanes are rotatably adjustable about radial axes extending radially from the axes of rotation of the rotor. The rotor vanes are automatically rotated about their own axes to increase the braking action with progressive rotation of the rotor.

3,702,178
ENGINE MOUNT ASSEMBLY

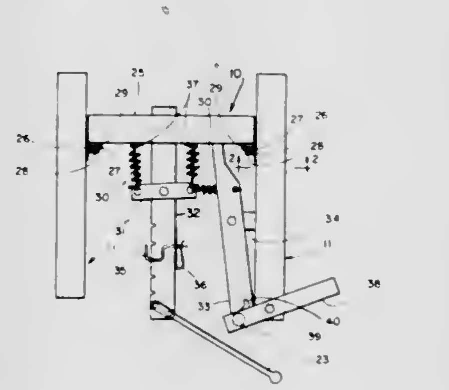
John C. Schulz, Franklin, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 17, 1971, Ser. No. 199,672
Int. Cl. B60k *5/12*
U.S. Cl. 248—9 **4 Claims**



An engine mount assembly for resiliently supporting an engine on a frame of a motor vehicle includes a bracket and preloaded mount assembly comprising two subassemblies which are secured together and to the frame. In one subassembly, rubber is moulded about a bushing and bonded to a base plate with the bushing dividing the rubber into separate bodies for taking engine jounce. In the other subassembly, a U-shaped plate has rubber roll pads bonded thereto which will cooperate with the bushing to control engine roll and also has rubber fore and aft pads bonded thereto which will cooperate with an engine attaching bracket to control fore and aft engine movement. The two subassemblies are secured together and to the frame and preload the rubber molded about the bushing. The engine attaching bracket is attached to the engine, saddles the frame attaching bracket at the fore and aft pads and is pivotally secured to the bushing.

3,702,179
SLIDE RAIL ASSEMBLY

Arthur O. Radke, Milwaukee, and Garth O. Hall and Harvey N. Tengler, New Berlin, Wis., assignors to Universal Oil Products Company, Des Plaines, Ill.
Filed Nov. 19, 1970, Ser. No. 90,970
Int. Cl. F16m *13/00*
U.S. Cl. 248—430 **5 Claims**

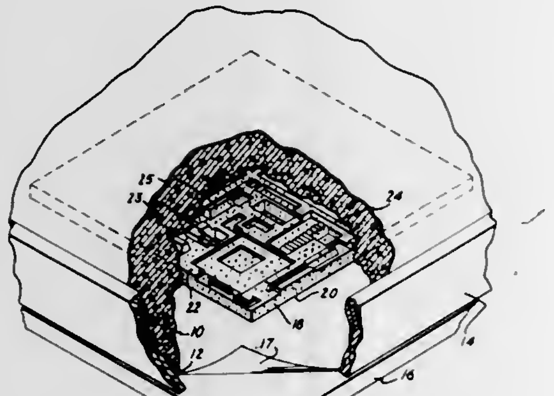


A track and rollers are engageable and are interposed between two relatively movable members to form a slide rail assembly. Two rollers are joined together by an axle, and a pivot pin passes through the axle and is mounted in a mounting flange that extends outward from one of the two relaitvely movable members parallel to and between the rollers. The pivot pin is thereby aligned with the path of relative motion and the rollers can pivot in a plane that is perpendicular to the direction of relative motion. Twisting of either of the relatively movable members thereby does not cause misalignment of the rollers with the track, and consequent jamming of the slide rail mechanism is prevented.

3,702,180

MOLD FOR CASTING CONCRETE PANELS

Robert L. Jones, Santa Ana, Calif., assignor of a fractional part interest to James T. Palm, Anaheim, Calif.
Continuation-in-part of application Ser. No. 569,397, Aug. 1, 1966, now Patent No. 3,515,779. This application Mar. 23, 1970, Ser. No. 21,755
The portion of the term of the patent subsequent to June 2, 1988, has been disclaimed
Int. Cl. E04g *11/00*
U.S. Cl. 249—188 **6 Claims**

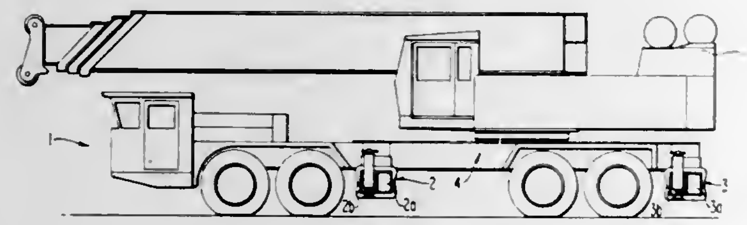


A mold is described that comprises a flat, thin plate formed from a rigid and substantially non-compressible cellular plastic foam, preferably polystyrene foam. The mold has a flat, smooth face and, on its opposite face, bears an intaglio pattern of an artistic relief.

3,702,181

HYDRAULIC OUTRIGGER JACK WITH SCREW LOCK

Joseph H. Keller, Jr., Hagerstown, Md., and Russell L. Sterner, Greencastle, Pa., assignors to Walter Kidde & Company, Inc., Clifton, N.J.
Filed Dec. 15, 1970, Ser. No. 98,258
Int. Cl. B60s *9/02*
U.S. Cl. 254—86 H **11 Claims**

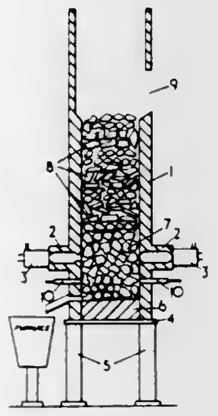


A hydraulic jack for use on the outriggers of a mobile crane wherein the jack is provided with a screw lock as a safety feature, for maintaining the jack in a desired extended position. The jack includes a piston reciprocably mounted within a cylinder, and in one embodiment the screw lock includes a member threadably mounted within the piston and adapted to engage one end of the cylinder to thereby lock the jack in the extended position. In another embodiment the screw lock includes a member threadably mounted within the cylinder and adapted to engage the piston to thereby lock the jack in the extended position.

3,702,182

MELTING OF IRON

Humphrey James Leyshon, Birmingham, England, assignor to British Cast Iron Research Association, Alvechurch, Birmingham, England
Filed Dec. 23, 1970, Ser. No. 100,972
Claims priority, application Great Britain, Jan. 23, 1970, 3,388/70
Int. Cl. F27b *1/08*
U.S. Cl. 263—29 **10 Claims**

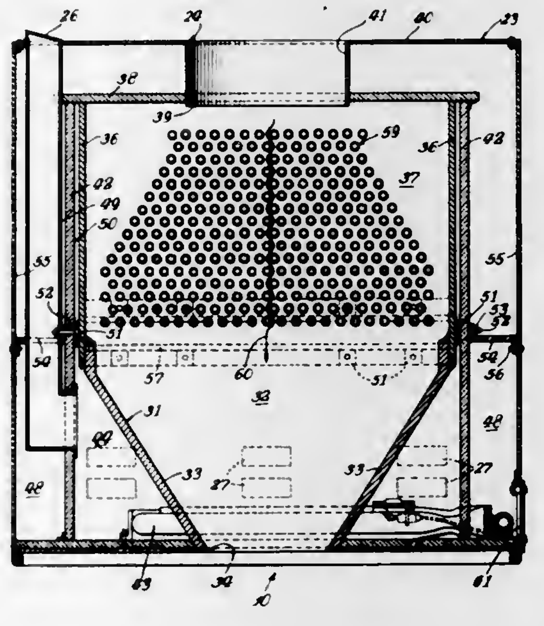


A cupola furnace for melting iron is provided with combustion chambers for non-solid fuels, e.g. gas oil or gas, to be burnt with air only, disposed around the external wall of the melting zone. The combusted products of this non-solid fuel are injected into an upper stratum of a coke bed, provided in the furnace, to maintain the coke in incandescent condition and provide an initial melting stage of the furnace. Additional external heating means is also supplied to a lower stratum of the coke bed, in order to superheat the initially melted metal. This arrangement ensures efficient combustion of the fuel and obviates the need for using oxygen or oxygen-enriched air for combustion in the initial melting stage.

3,702,183

GRAIN DRIER

Donald Hull, Baylis, Ill., assignor to Mobile Dry, Inc.
Filed Feb. 10, 1971, Ser. No. 114,146
Int. Cl. F27b *5/00*
U.S. Cl. 263—41 **20 Claims**



A grain drier for drying moist granular crops, such as wheat, oats, beans, corn, etc. The drier includes a

drying chamber through which the grain is passed while being heated to a high temperature for a short period of time thereby to remove moisture therefrom. The dried grain is delivered from the drying chamber for delivery to a grain hopper or the like. The drier may be carried on a conventional combine. The drier includes means for adjusting the operating temperature suitably for different types of grain.

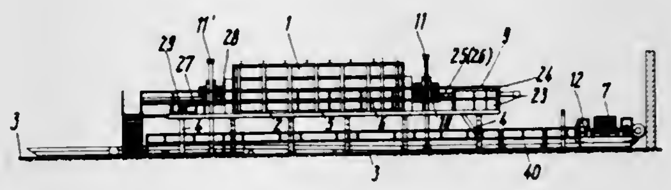
3,702,184

FURNACE INSTALLATION PARTICULARLY FOR MELTING GRAY IRON IN FOUNDRIES

Friedrich Munk and Gunter Korfer, Junkerath, Eifel, Germany, assignors to Junkerather Maschinenbau Gesellschaft mit beschrankter Haftung, Junkerath, Eifel, Germany

Filed May 10, 1971, Ser. No. 141,790

Int. Cl. C21c *1/00*
U.S. Cl. 266—13 **10 Claims**



A furnace installation comprises one or several melting furnaces, particularly electric furnaces and a preheating oven which is arranged before all of the other furnaces. The charge material is contained in large size containers which are transported through the preheating oven by means of a feeding device. The charge buckets are initially moved to the preheating oven on a vehicle which moves along a trackway and the buckets are either transferred from the vehicle vertically into an oven located over the trackway or laterally into a preheating oven located alongside the trackway. The same or similar wheeled vehicle is ararnged to receive the charge bucket at the exit end of the preheating oven and deliver it along a further length of trackway to one or more furnaces. A portion of the length of the trackway is advantageously made, so that it may swivel through an angle for delivering the preheated material selectively into one or more electric furnaces.

3,702,185

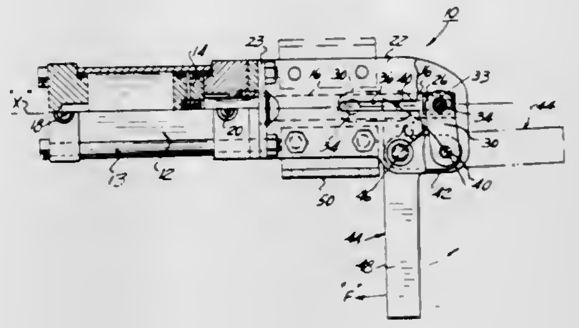
CYLINDER OPERATED POWER CLAMP

Leland F. Blatt, 790 Shoreham Road,
Grosse Pointe Woods, Mich. 48236

Filed Dec. 11, 1970, Ser. No. 97,165

Int. Cl. B23q *3/03;* **B25b** *1/04*
U.S. Cl. 269—32 **1 Claim**

A work clamp or hold down clamp used for holding workpieces against a corresponding surface which is power operated by a fluid motor having a piston and piston rod; the clamp comprises a pivot arm which is pivoted within an extension of the fluid motor and the outer end of the piston rod of the fluid motor is attached to one end of a link or swing lever and the other end of the swing lever is attached to the pivot arm; the pivotal connection to the swing lever or link is by means of a pin which extends into a longitudinal slot provided in the extension of the fluid motor and which is disposed along the center line of the fluid motor; upon reciprocation of the piston of the fluid motor the pin which connects the piston rod to the swing lever is moved longitudinally in the slot causing the swing lever to follow and thereby pivot the clamp arm around its fixed pivot from release into clamping position or vice-versa.



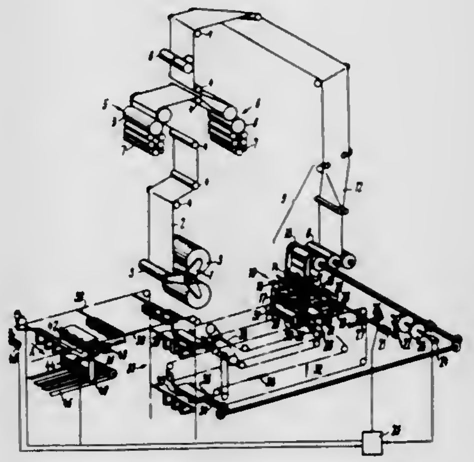
3,702,186

ROTARY WEB PRINTING MACHINE

Yakov Efimovich Duchinsky, Kiev, Grigory Avramovich Radutsky, Moscow, Rafail Efimovich Kheifets and Grigory Iosilfovich Zax, Kiev, and Nikolai Ivanovich Anikanov, Leonid Pavlovich Grachev, and Mikhail Evseevich Frumkin, Moscow, U.S.S.R., assignors to Izdatelstvo "Izvestia," Moscow, U.S.S.R.

Filed Feb. 18, 1971, Ser. No. 116,547

Int. Cl. B41f *13/58*
U.S. Cl. 270—6 **5 Claims**



A rotary web printing machine, such as a newspaper printing machine and the like is disclosed, of which the principal characteristic feature is that the delivering apparatus for delivering folded sheets, e.g. newspapers from said machine comprises a deflector for directing the folded sheets leaving the folder of the machine alternatingly along two different paths, into either one of two flyer drums disposed side-by-side under this deflector, each flyer drum being associated with a comb rest removing the folded sheets from the flyer drum and directing them into the respective bin disposed therebelow, in which a stack of folded sheets is formed.

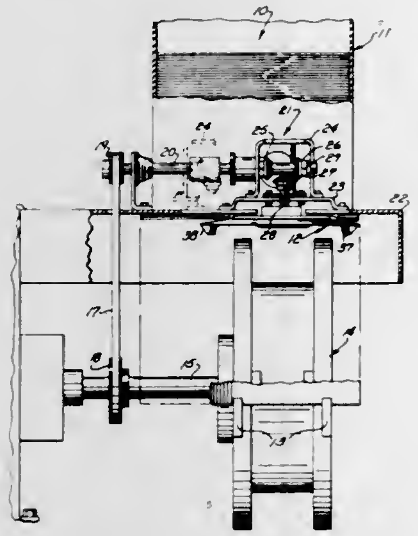
3,702,187
APPARATUS FOR SEPARATING SIGNATURES IN A GATHERER

Carlton V. Hageman and Victoriano F. Rana, Easton, Pa., assignors to Harris-Intertype Corporation, Cleveland, Ohio

Continuation-in-part of application Ser. No. 45,010, June 10, 1970, now Patent No. 3,650,525. This application Aug. 13, 1971, Ser. No. 171,534

Int. Cl. B65h *3/08, 3/50*

U.S. Cl. 271—29 **10 Claims**



A signature gatherer for the production of books or booklets with gate-folded pages which includes a bi-directional rotary disc separator for separating signatures at their folded corners, whether stacked for feeding gate-folded or standard-folded signatures.

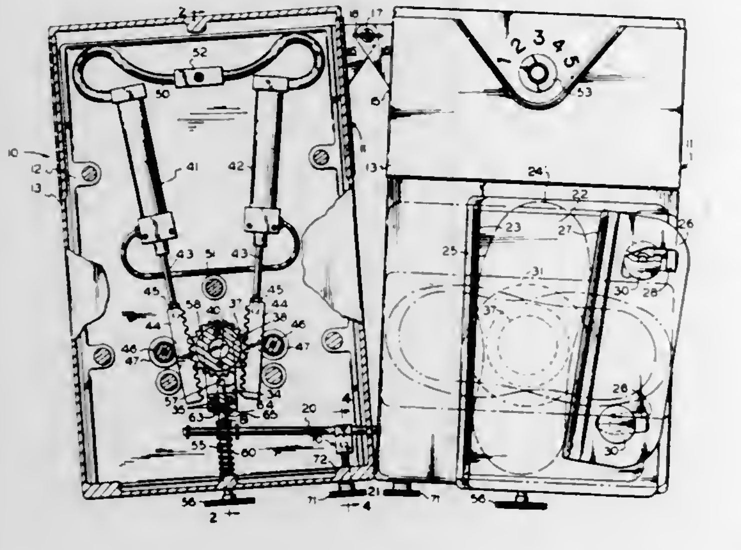
3,702,188
THERAPEUTIC EXERCISER WITH REGULATABLE HYDRAULIC TORSIONAL RESISTANCE

Cecil E. Phillips, Fay M. Bennett, and Robert L. Larson, Eugene, Oreg., assignors to Saf-Pla Corporation, Eugene, Oreg.

Filed Aug. 19, 1971, Ser. No. 173,127

Int. Cl. A63b *21/22*

U.S. Cl. 272—57 A **6 Claims**



A therapeutic exerciser for active external adductive and abductive rotation of ankles, knees and hips furnishes uniform torsional resistance throughout the complete range of movement thereof. The exerciser includes a pair of floor mounted based members and a rotatable foot-receiving member pivotally mounted on each base member. Hydraulic cylinders mounted in each base member and operatively attached to each foot-receiving member supply constant torsional resistance to each such member throughout the full range of adductive and abductive rotation thereof. A valve is provided to regulate the amount of resistance applied by the cylinders. The exerciser further includes a spring operated plunger in association with each foot-receiving member optionally to lock the same with respect to its base member to permit isometric exercise of the limbs. The distance between base members may be extended selectively to vary the distance between the foot-receiving members.

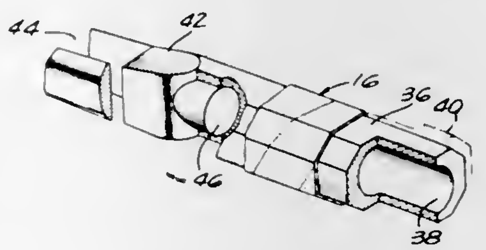
3,702,189
TENNIS RACKET

Thomas P. Galich, 2314 San Ysidro Drive, Beverly Hills, Calif. 90210

Continuation-in-part of application Ser. No. 863,868, Oct. 6, 1969, which is a continuation-in-part of application Ser. No. 770,467, Oct. 7, 1968, which in turn is a continuation-in-part of application Ser. No. 680,683, Nov. 6, 1967, now abandoned. This application Mar. 4, 1971, Ser. No. 121,016

Int. Cl. A63b *49/08, 49/12*

U.S. Cl. 273—73 J **5 Claims**



The invention in certain embodiments provides a one piece tennis racket cast in a permanent mold from nonferrous materials including magnesium alloys. The frame of the racket in one embodiment includes a head portion having radially disposed holes cast in planar alignment with each other and communicating with an annular groove into which the stringing or netting is nested and protected from damage. In another embodiment, the head portion includes a plurality of openings disposed in parallel alignment and arranged in a predetermined cross-sectional configuration so as to provide continuous contact for the stringing or netting. The frame also includes a handle portion with the center or shaft region being formed into twin or bifurcated arms which diverge in a neck portion adjacent to the head portion. In still another embodiment the unit is forged from a nonferrous metal, preferably aluminum or an aluminum alloy, with bridging reinforcing elements for added strength and protection against acoustic fatigue.

3,702,190
AUTOMATED FOOTBALL GAME

Kenneth M. Waldrop, 1545 N. 43rd St., Lawton, Okla. 73501

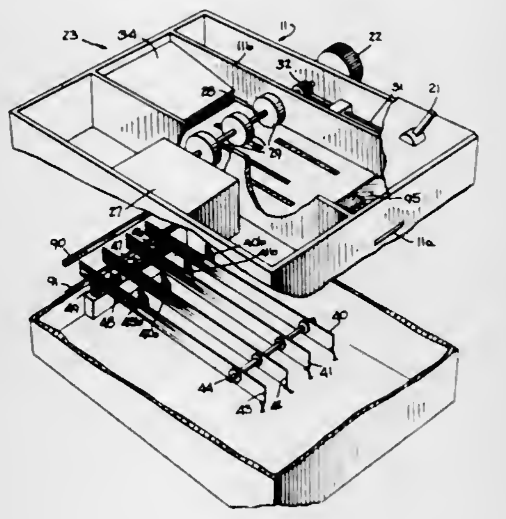
Filed Feb. 16, 1970, Ser. No. 11,595

Int. Cl. A63f *7/06*

U.S. Cl. 273—94 R **6 Claims**

A fully automated football game is disclosed in which an offensive player is moved in any direction along a simulated football field and wherein defensive players are located along the football field to stop the progress of the offensive player. The movement of the offensive player is controlled by playing cards which have perforations

coded thereon which correspond to different predetermined offensive plays. A play maker is provided for sensing the perforations in the playing cards and for controlling a pair of motors which move the offensive player along the football field in accordance with the play coded on the card being sensed. The play maker comprises a housing with a play card insertion opening. Mounted in the housing are a plurality of levers which are biased against the card and through the perforations as the card moves past the levers. A spring motor-roller is engaged by a card and wound up as a card is inserted, and upon release of the spring motor the roller drives the card past the levers and outwardly of the housing.



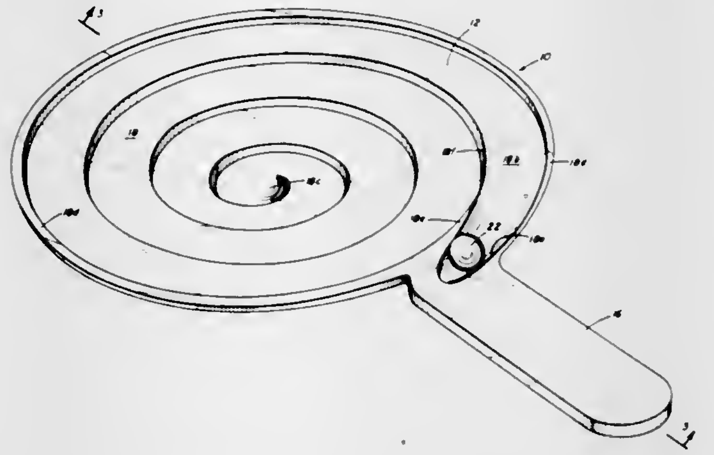
3,702,191
BALL AND RACEWAY AMUSEMENT DEVICE

Tadas Zilius, Hopewell, N.J., and Joseph Simboli, Cheyney, Pa., assignors to Columbia Broadcasting Systems, Inc.

Filed Feb. 25, 1971, Ser. No. 118,687

Int. Cl. A63b *67/14*

U.S. Cl. 273—112 **6 Claims**



An amusement device consisting of a pan-like paddle, concave on one face and convex on the other, provided with an integral radially extending handle, both faces having formed thereon an inclined spiral raceway extending from a point at the outer periphery thereof near the handle and terminating in a ball-receiving depression at the center. A ball of marble is caused to move up or down the raceways by properly tilting the paddle, greater skill being required to keep the ball on the raceway on the convex side than on the concave side.

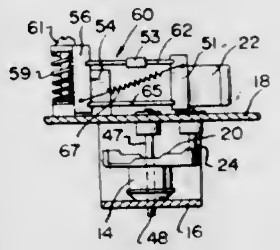
3,702,192
MAGNETIC TAPE REPRODUCING DEVICE

William B. Huber, Park Forest, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation of abandoned application Ser. No. 567,126, July 22, 1966. This application Oct. 2, 1969, Ser. No. 866,078

Int. Cl. G11b *21/08*

U.S. Cl. 274—4 A **4 Claims**



A mounting for supporting a magnetic tape head which is movable between the different tracks of a recorded multi-track magnetic tape includes a parallel linkage having at least three bars each of which are pivotally connected to a support block, which is positioned parallel to the magnetic tape, at one end and to a movable bracket receiving the tape head at the other end. Two of the bars have one end pivotally connected to opposite sides of the block and the other end of each is inserted in the corresponding sides of the head bracket near the top thereof to pivotally mount the bracket and the head to the block. The third bar is equal in length to the first two bars and is pivotally connected between the block and the bracket near the bottom of the head. The linkage maintains the face of the tape head parallel to the plane of the magnetic tape and prevents torsional rotation thereof with the same being moved between the different tracks of the tape.

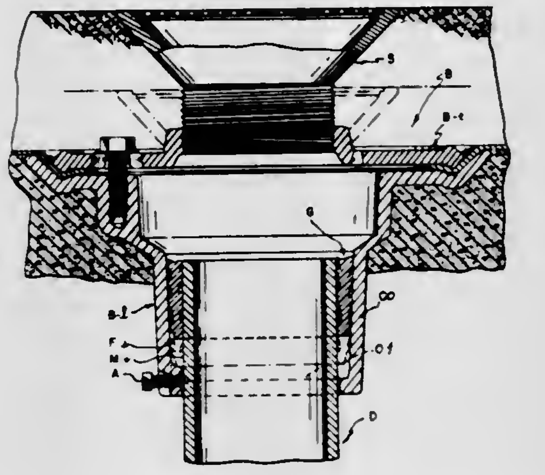
3,702,193
SELF-RETAINING AND SEALING JOINT GASKETING SLEEVE

George J. Flegel, Michigan City, Ind., and William L. Zopfi, Ferndale, Mich., assignors to Josam Manufacturing Co.

Continuation of abandoned application Ser. No. 863,791, Oct. 6, 1969. This application Feb. 22, 1971, Ser. No. 117,724

Int. Cl. F16j *9/00;* **F16l** *19/00*

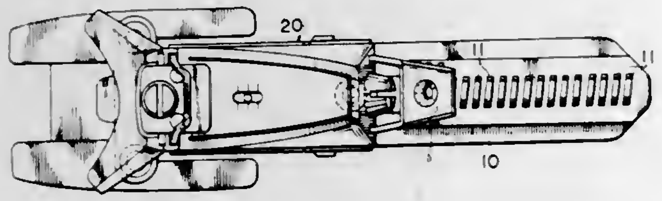
U.S. Cl. 277—209 **15 Claims**



An elastomeric seal collar or gasket sleeve insertable by axially applied force and self-retaining in sealing relation and position between coaxially disposed non-grooved, non-ribbed telescoped elements such as a caulked type body outlet of a drain and a pipe stub. A generally cylindrical annular body has an internal set and an external set of integral axially spaced similar circumferential fins, the internal set axially rearwardly offset from the external set. For the fins, sloping backwardly from the insertion leading end of the body, a particular form is described and the trailing end of the body is provided with an external arcuate sealing rim and a broad end face, grooved for driving tool engagement and to allow sealing compression for the rim.

3,702,194
SLIDING DEVICE FOR SKI HEEL BINDING

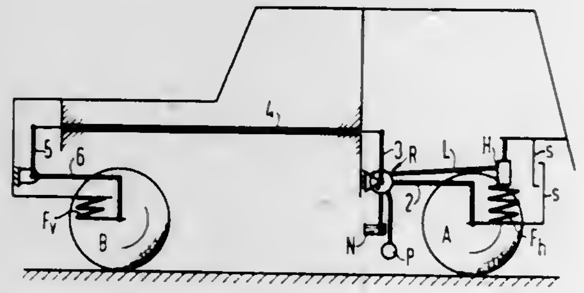
Michio Iizuka, Tokyo, and Toshikazu Kikuchi, Ichikawa, Japan, assignors to Hope Kabushiki Kaisha, Tokyo, Japan
Filed July 17, 1970, Ser. No. 55,632
Claims priority, application Japan, Jan. 12, 1970, 45/3,352
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **2 Claims**



A sliding device for a ski boot heel binding includes a base with a number of evenly spaced projections and a worm (a short revolving screw gear) connected to a body of the ski heel binding. The end of the worm is provided with a groove. When the worm is rotated, using a screwdriver or other suitable tool, by means of the groove, the worm as well as the ski heel binding will move forward or rearward because of the worm's engagement with the projections on the base.

3,702,195
MOTOR VEHICLE

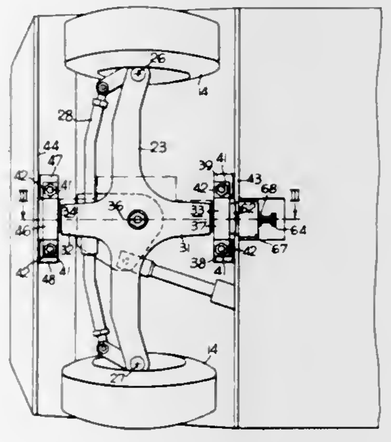
Dieter Lutz, Schweinfurt, Germany, assignor to Fichtel & Sachs AG, Schweinfurt am Main, Germany
Filed Aug. 3, 1970, Ser. No. 60,240
Claims priority, application Germany, Aug. 5, 1969, P 19 39 719.4
Int. Cl. B16g *17/04*
U.S. Cl. 280—104 **20 Claims**



A vehicle has means for adjusting the height of the chassis in respect of one of the vehicle axles, a level control connected to the adjusting means, and height indicating or measuring means interposed between both vehicle axles and the chassis, these height measuring means so controlling the level control means that the latter responds solely to deviations from a desired height of the chassis as measured.

3,702,196
STEER AXLE WITH LONGITUDINAL ADJUSTMENT

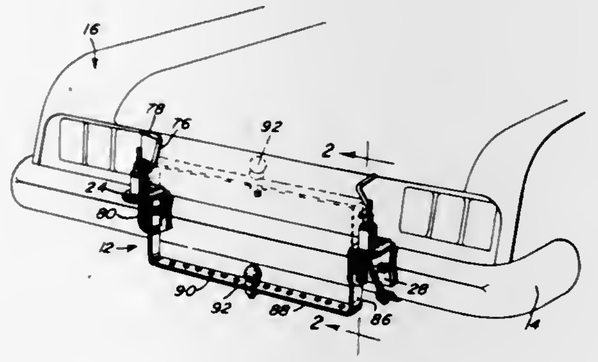
Edward V. Krutis, Monee, Ill., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed May 6, 1971, Ser. No. 140,699
Int. Cl. B60g *25/00;* **B62d** *37/00*
U.S. Cl. 280—111 **6 Claims**



A pair of longitudinally spaced bearings mount the steer axle of an industrial truck for oscillation about a longitudinal axis. One of the bearings is longitudinally adjusted by a single screw acting against an end cap on the outer end of the one bearing. The cap also serves to seal the outer end of the one bearing against egress of lubricant and ingress of foreign material.

3,702,197
TRAILER HITCH

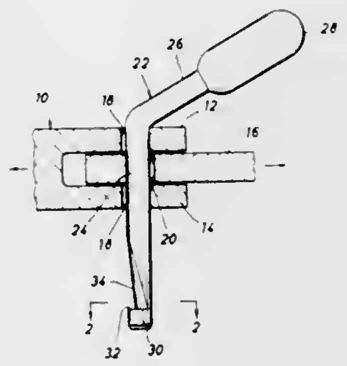
Aubrey G. Sellers, Kent, Ala., assignor to G. E. Causey, Eclectic, and Jessee W. Pienezza, Tallassee, Ala., fractional part interest to each
Filed Nov. 24, 1970, Ser. No. 92,460
Int. Cl. B60d *1/14, 7/00*
U.S. Cl. 280—502 **10 Claims**



A trailer hitch attachable to the rear bumper of an automobile in the form of a generally L-shaped member having upper adjustable hook means engaging the upper edge of the bumper and a lower adjustable hook means engaging the lower edge of the bumper and being manually adjustable by a screw threaded assembly to enable quick, safe and rigid assembly of the trailer hitch with the bumper. The trailer hitch includes a single unit in which the hitch ball is mounted at the rear of the L-shaped member or a dual unit in which an adjustable interconnecting bar extends between two of the L-shaped members with the hitch ball mounted thereon.

3,702,198
HITCH OR COUPLING PIN

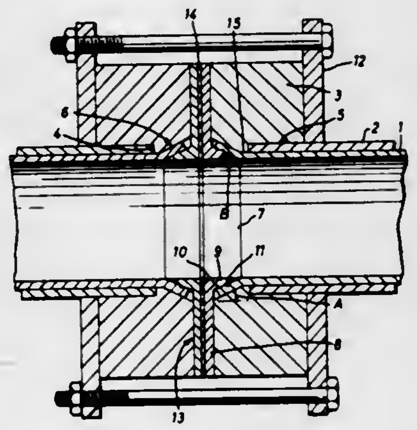
David W. Alley, 5917 Harbrook, Houston, Tex. 77017
Filed Sept. 14, 1970, Ser. No. 72,029
Int. Cl. B60d *1/02*
U.S. Cl. 280—515 **5 Claims**



A hitch or coupling pin for insertion through aligned openings in two parts of a coupling to connect the same together and having means for preventing accidental disconnection of the coupling by dislodgement of the pin but which permits the pin to be readily removed by lifting the pin out of the openings. The pin is provided with means tending to tilt the pin away from a position in alignment with the openings of the coupling when the pin is inserted therethrough and means engageable with the coupling to prevent removal of the pin when the pin is so tilted, but which permits the pin to be lifted out of the openings to disconnect the parts when the pin is held in alignment with the openings.

3,702,199
ASSEMBLIES OF TUBULAR MEMBERS

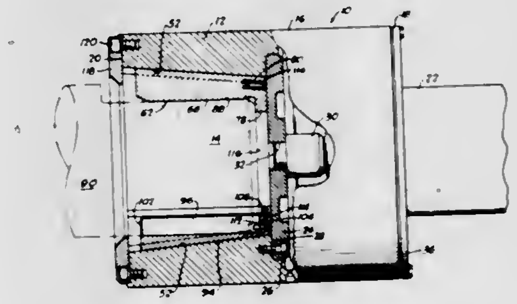
Geoffrey N. Brooks, Stalybridge, and John L. F. Crompton, Handforth, England, assignors to Dunlop Holdings Limited, London, England
Filed June 17, 1970, Ser. No. 46,976
Claims priority, application Great Britain, July 16, 1969, 35,705/69
Int. Cl. F16l *23/00*
U.S. Cl. 285—55 **2 Claims**



An assembly of tubular members in which two tubular members each having an outer shell and an inner protective lining such as an elastomer lining are coupled together at adjacent ends. The lining of each tubular member extends beyond the outer shell at the respective adjacent end and each tubular member carries an annular coupling flange, the coupling flanges being clamped together. An annular insert lies between the tubular members and at least part of the extending portion of each lining is compressed between the annular insert and an inner face of the respective coupling flange at an acute angle to the longitudinal axis of the tubular members and is in fluid tight sealing contact with the insert and the inner face of the respective coupling flange.

3,702,200
HUB-TO-SHAFT CONNECTOR AND METHOD FOR COUPLINGS

Kenneth K. Carman, Ellicott City, Md., assignor to Koppers Company, Inc.
Filed June 14, 1971, Ser. No. 152,718
Int. Cl. F16d *1/06*
U.S. Cl. 287—52.5 **12 Claims**

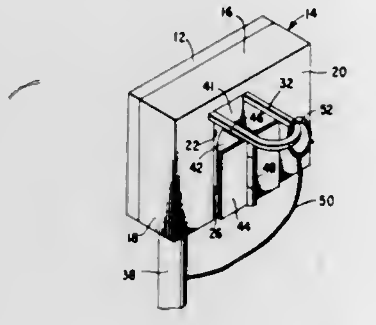


A method of connecting a shaft coupling hub to a shaft for rotation therewith by inserting the shaft end into a bore in the hub, the shaft end preferably including a pair of diametrically opposed flat surfaces and a pair of diametrically opposed arcuate surfaces, and, during insertion of the shaft end, simultaneously urging both the flat and arcuate surfaces into wedging engagement with the hub. The preferred apparatus for performing the method comprises a connector having a hub connected to the coupling with a bore for receiving the shaft end. The hub includes a pair of diametrically opposed wedge keys and a pair of diametrically opposed bore liners between the keys, all of which are in alignment with corresponding surfaces on the shaft end. Both keys and bore liners are retained in axially converging recesses in the bore and are adapted for movement along axially converging paths provided by the recesses thereby wedging the shaft end between the keys and bore liners and, in effect, with the hub. The keys and bore liners are suitably retained in the recesses; they may be spring loaded to urge them along axially diverging paths upon removal of the shaft end to provide an enlarged entrance for re-entry of the shaft end. If desired, the connector may be constructed to use a single key and single bore liner or to use pairs of diametrically opposed keys and bore liners with only one of each pair being moveable along an axially converging path. The keys and bore liners are preferably constructed to be automatically wedged between the hub and shaft end by insertion of the shaft end but, if desired, may be constructed to be manually wedged therebetween after insertion of the shaft end in the hub.

3,702,201
DOOR LOCKING MECHANISM

Barry A. Elisofon and Judith Elisofon, both of 2010 Newkirk Ave., Brooklyn, N.Y. 11226
Filed July 26, 1971, Ser. No. 165,968
Int. Cl. E05c *17/44*
U.S. Cl. 292—338 **7 Claims**

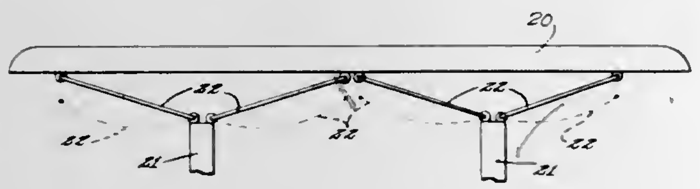
A "police" type door-locking device in which a lock-operated tongue having a rod-end receiving, channel shaped extension is moved by the lock from the space between a lock chamber to a rod-end confining chamber, on which a blocking member for preventing the movement of the tongue is movably supported for movement into and out of the space between the chambers. In the preferred form, the blocking member is binged on the lock chamber. In one form, the uper end of the rod is releasably connected by a flexible connector to the rod-guide bight secured on the locking device over the space between the chambers.



3,702,202

ENERGY STORING/ABSORBING BUMPER SUPPORT SYSTEMS

Rollin Douglas Rumsey, Buffalo, N.Y., assignor to Houdaille Industries Inc., Buffalo, N.Y.
Filed Apr. 30, 1970, Ser. No. 33,260
Int. Cl. B60r *19/08;* **F16f** *7/00*
U.S. Cl. 293—89 **44 Claims**



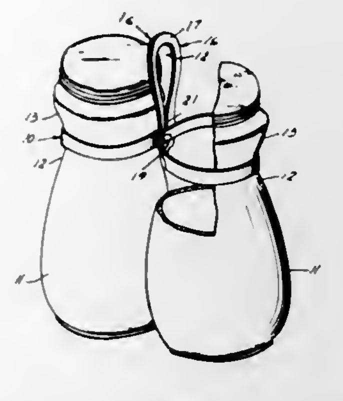
Buckling columns, i.e. steel bars having stiff spring resiliency, provide bumper support enabling returnable yielding of the bumper after at least a predetermined maximum impact pressure thereagainst. In an automobile bumper a safe impact load provision of five miles per hour for a four thousand pound vehicle permitting about two inch deflection under pressure will eliminate a substantial amount of potential damage to an automobile bumper. Excessive rebound energy may be damped by inserting friction buffing and damping into the system.

3,702,203

CONTAINER CARRIER

George F. Oltmanns, 2528 Pensacola Ave., Chicago, Ill. 60618
Filed Oct. 19, 1970, Ser. No. 81,887
Int. Cl. B65d *23/10*
U.S. Cl. 294—87.2 **4 Claims**

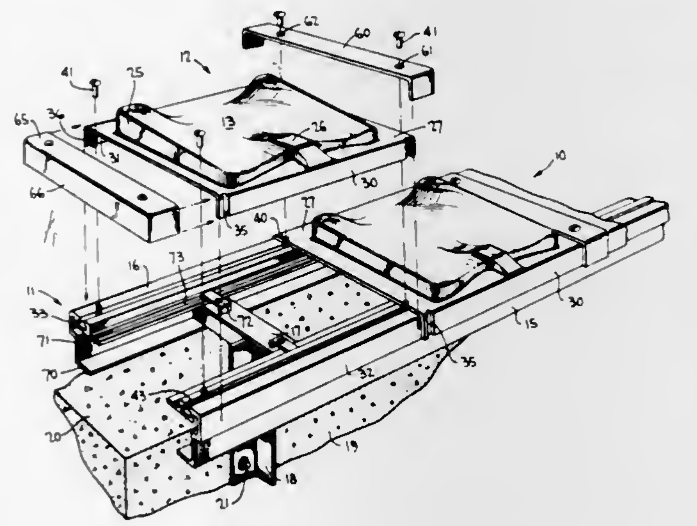
A carrier for two or more containers having a peripheral enlargement comprises a strip-form blank composed of transversely rigid material and having integrally formed, transversely offset handle loops at opposite ends of a medial strap portion. The carrier is deflected into a **figure 8** configuration with the handle loops oppositely disposed at the juncture of the loops forming the figure 8 and with the medial strap passing through the handle loops, thereby to form a carrier for conveniently transporting a pair of containers. A pair of the carrier blanks may be formed into four loops and joined together in a manner to form a carrier for four similar containers.



3,702,204

MODULAR SEATING ASSEMBLY

Max E. Tipton, Easton, and Wilmer R. Schultz, Emmaus, Pa., assignors to Wilmer R. Schultz, Emmaus, Pa.
Filed Sept. 15, 1970, Ser. No. 72,416
Int. Cl. A47c *1/12*
U.S. Cl. 297—248 **36 Claims**

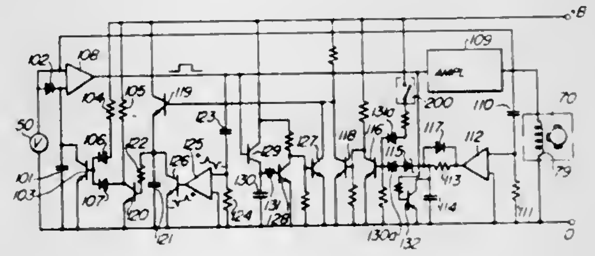


Modular seats molded of plastic material are securely supported on an elongated framework by fasteners extending between and abutting the adjacent side edges of the seats while serving to accommodate differential longitudinal and transverse expansion and contraction with respect to the framework. The framework includes parallel support rails that cooperate with a peripheral planar area or portion and overhanging lips at the front and back for nonstressing support of the seat modules. Embossments on the lips provide transverse snugness. Laterally extending finish strips cover the joint between the seats and hold down the edges, and also cover the embossments. A slot is provided along each rail for receiving a bolt; a barrel nut being driven on the bolt to fasten the seat modules in position with only top drive being applied. The bolt head is sufficiently narrow to drop between the shoulders of the slot whereupon the sides of the slot limit rotation of the bolt to an oblique angle and insure engagement of the head with said shoulders in fastening relationship. The nut includes a cylindrical body having a lower face for engagement with the framework in frictional locking relationship; the body being substantially the same length as the thickness of the panels (such as the finish strip and seat or transport trailer skin) to obviate compression stresses within said panels and allow a floating interconnection for differential expansion and contraction and mechanical vibration.

3,702,205

ANTI-SKID DEVICE FOR AUTOMOTIVE VEHICLES

Hiroshi Arai and Akira Nakamura, Toyota, Atutoshi Okamoto, Toyohashl, and Shunji Okumura, Kariya, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, and Nippondenso Kabushiki Kaisha, Alchi-ken, Japan
Filed Oct. 13, 1970, Ser. No. 80,431
Claims priority, application Japan, Oct. 18, 1969, 44/83,410
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 A **5 Claims**



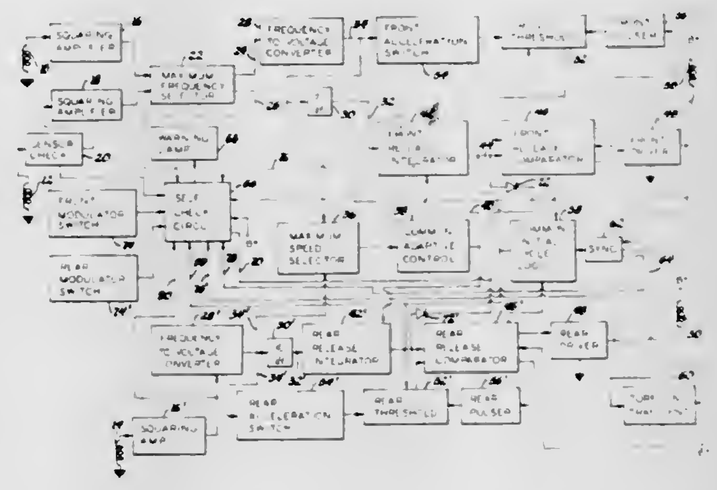
An anti-skid device for an automotive vehicle is disclosed comprising a wheel speed voltage generator for generating a wheel speed voltage corresponding to a wheel speed; a reference wheel speed voltage generator which generates a reference wheel speed voltage corresponding to a reference wheel speed which, being initially lower than a wheel speed, is reduced at a first set decelerating rate with the decrease in wheel speed at the time of braking. A differential amplifier which generates a signal to reduce the braking pressure when said reference wheel speed voltage is higher than said wheel speed voltage; said wheel speed voltage generator, reference wheel speed voltage generator and differential amplifier constituting a lock detector means. A pressure difference detector is provided for generating a signal when the braking pressure of a wheel cylinder is equal to that of a master cylinder; while a control means switches said reference wheel speed voltage generator from a first set decelerating rate to a lower second set decelerating rate when said pressure difference detector generates a signal after the generation of a braking-pressure reducing signal by said differential amplifier; and a braking pressure modulator means reduces the braking pressure according to a signal from said differential amplifier. The maximum value of the friction coefficient between the wheels and a road surface is sought while the maximum tire torque corresponding to said maximum friction coefficient is obtained, to control the braking pressure efficiently and safely on a road surface with any friction coefficient from a frozen road to a concrete-paved road without the locking of wheels, irrespective of the manner in which a vehicle driver applied the braking force to the wheels.

3,702,206

SYNCHRONIZING CIRCUIT FOR FOUR-WHEEL ANTILOCK BRAKE CONTROL SYSTEM

Douglas W. Sweet, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed June 9, 1971, Ser. No. 151,238
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 R **3 Claims**

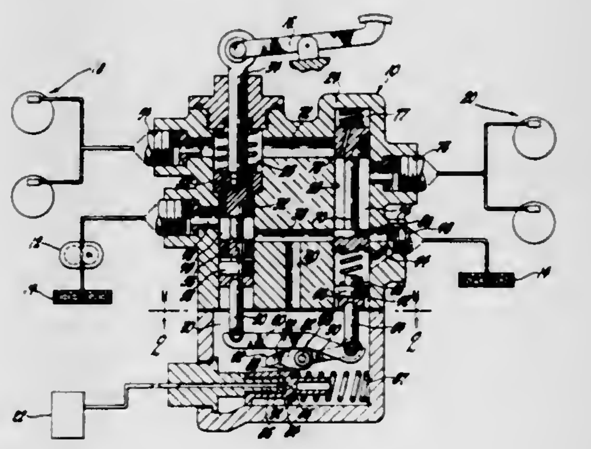
A four-wheel antilock brake control system has at least three wheel speed sensors, each having one side grounded. One sensor for a non-driven wheel is monitored to assure circuit continuity between the sensor and the control circuit. All the sensor outputs are monitored by a self-check circuit to detect any sensor malfunction and to disable the control in the event of a malfunction. The self-check circuit further disables the control if a substantially zero rear wheel speed is indicated during periods of substantial front wheel speed, thus preventing the occurrence of antilock brake cycling in the front wheels when the rear wheels approach a lock-up condition. The self check circuit further disables the control when any brake modulator is not in its normal position prior to a request by the control for antilock operation. In each case, the self-check circuit will disable the control only after some predetermined time delay. Two different time delays are accomplished using a single timing capacitor. A circuit is provided to release the rear brakes briefly when and if the front brakes are released first by the antilock control.



3,702,207

FLUID PRESSURE PROPORTIONING UNIT

Daniel A. Armstrong, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.
Continuation-in-part of abandoned application Ser. No. 63,365, Aug. 13, 1970. This application Nov. 10, 1970, Ser. No. 88,456
Int. Cl. B60t *8/18*
U.S. Cl. 303—22 A **3 Claims**



A fluid proportioning unit for a motor vehicle braking system in which the pressure output of a valve member operates the front wheel brakes and acts through a lever which is pivoted on a fulcrum mechanism to operate another valve member which controls the rear wheel brakes. The fulcrum mechanism includes a cam having a cam surface constructed so that the point of contact between the cam and the lever migrates across the lever as the lever rotates to progressively decrease the proportion of front brake pressure which is transmitted to the rear brakes in order to compensate for the dynamic weight transfer characteristics of the vehicle. A piston controlled by the pressure in a load leveler system rotates the cam prior to brake actuation to adjust the proportioning unit according to the vehicle static load.

3,702,208

MAGNETIC BEARINGS

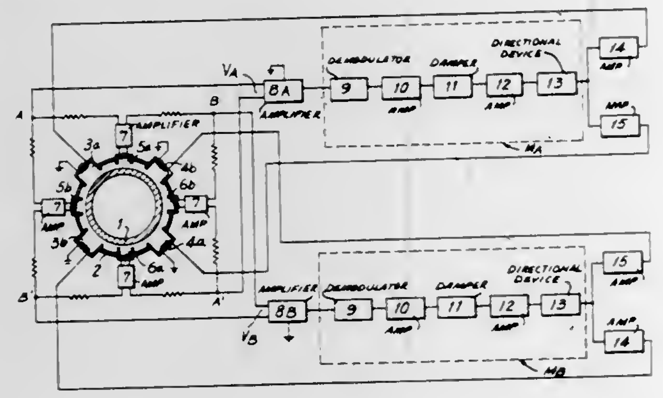
Helmut Habermann, 2 Allee Principale; Loyen Roger, 27 Allee Circulaire; and Pierre Joly, 18 Allee Circulaire, all of Vernon, France

Filed June 16, 1971, Ser. No. 153,710

Claims priority, application France, June 17, 1970, 7022292

Int. Cl. F16c *39/06*

U.S. Cl. 308—10 **5 Claims**



A magnetic bearing such as for a satellite comprises two relatively rotatable members, one of which is at least partly constituted of a magnetic material while the other is provided with at least one pair of electromagnets. The electromagnets in each pair are arranged to act in opposition on the magnetic material and are connected to a respective pair of detecting devices for detecting the relative positions of the two members of the bearing, the detecting devices being connected in opposition and being arranged to control the electromagnets so that any relative displacement in one direction or the other between the two members of the bearing is nullified by the combined action of the electromagnets.

3,702,209

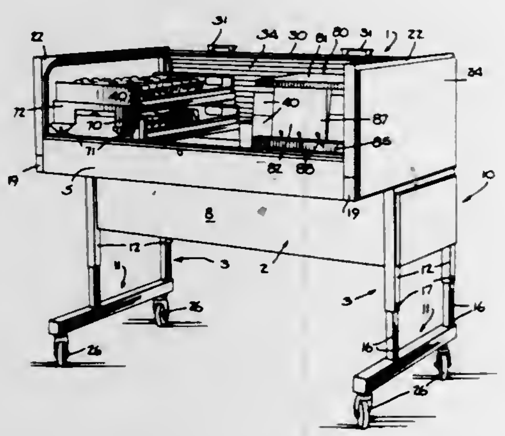
FILE CABINET

George E. Moore, Jamestown, N.Y., assignor to Watson Manufacturing Company, Inc., Jamestown, N.Y.

Filed Nov. 25, 1970, Ser. No. 92,553

Int. Cl. A47b *17/00, 88/00, 95/00*

U.S. Cl. 312—196 **6 Claims**



An improved file cabinet which has an adjustable posting board and adjustable height. The posting board being slidable on adjustable tracks.

3,702,210

FOWL CARRIER

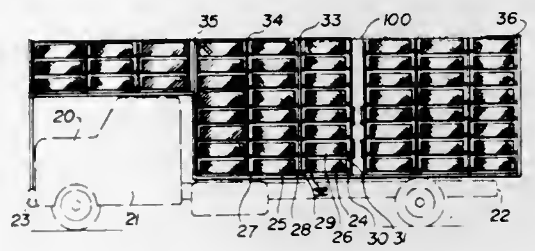
Kenneth A. Farrugie, 19 Kensington Ave., Brantford, Ontario, Canada

Filed Aug. 3, 1971, Ser. No. 168,580

Claims priority, application Canada, May 20, 1971, 113,522

Int. Cl. A47b *53/00, 7/00, 87/00*

U.S. Cl. 312—198 **6 Claims**



The invention relates to a slidable fowl carrier adapted to be mounted in rack-style on the transporting vehicle body. Each of the fowl carriers is divided into pivotally attached compartments which extend transversely from one side of the transport vehicle to the other and are slidably supported by horizontal stringer members which, in turn, are supported on vertical upright members resting on the transport vehicle. Each compartment of the carrier is separated from the adjoining compartment by a partition preferably covered by metallic screening material.

3,702,211

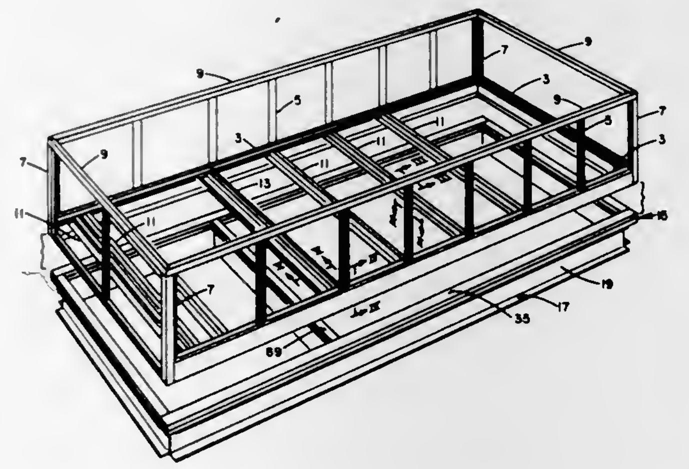
FRAME FOR ROOFTOP AIR CONDITIONER

Robert L. Young, Liverpool, Russell E. Wood, East Syracuse, Samuel D. Farney, North Syracuse, and Arnold U. Hogan, Verona, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed July 14, 1971, Ser. No. 162,554

Int. Cl. A47b *47/08, 57/08;* **E04b** *7/18*

U.S. Cl. 312—257 **6 Claims**



A frame for a rooftop air conditioning unit for mounting heating and/or cooling elements therein and suitable access panels thereon to provide an integrated, weathertight air conditioning unit.

3,702,212

METHOD AND DEVICE FOR THE MANUFACTURE OF ELECTRON TUBES

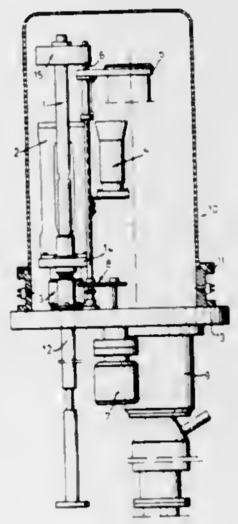
Jean-Charles Viers, Brive-la-Gaillarde, and Robert Pierre Jaure, Rolland-Brive-la-Gaillarde, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 15, 1969, Ser. No. 841,751

Claims priority, application France, July 16, 1968, 159,306

Int. Cl. H01j *9/38, 17/36*

U.S. Cl. 316—3 **7 Claims**



A method and apparatus for manufacturing, within an evacuated housing, radiation sensitive electron tubes comprising vapor-depositing a plurality of window sections of the envelope of the electron tube in sequence, checking for defects after a layer is formed on each window section until a window without defects is found, and then sealing this window to the glass envelope comprising the elements of the electron tube.

3,702,213

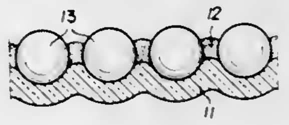
REFLEX LIGHT REFLECTOR SHEET AND METHOD FOR ITS MANUFACTURE

Kurt Schwab, Innsbruck, Tirol, Austria, assignor to D. Swarovski & Co., Tirol, Austria

Filed July 30, 1969, Ser. No. 847,528

Int. Cl. G02b *5/12*

U.S. Cl. 350—105 **9 Claims**



Reflex light reflector sheet of the kind wherein a spacer layer is interposed between substantial spherical transparent beads and a rear mirror surface. The spacer layer is formed from a smooth, prefabricated self-supporting transparent plastic foil which is deformed so as to snugly conform to and envelop the rear contours of the spherical beads. The deformation of the spacer layer foil is accomplished by subjecting the foil with the beads placed thereon to a pressure differential such as by applying vacuum to one side of the foil.

A plane cover layer may be superimposed on the front portion of the beads and the beads are bonded by a suitable binder.

3,702,214

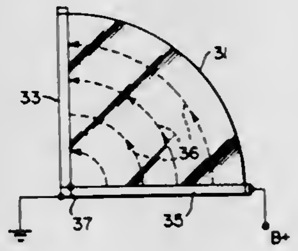
ELECTRO-OPTICAL DEVICE FOR CONVERSION OF TANGENTIAL AND RADIAL POLARIZATION COMPONENTS TO RECTANGULAR CO-ORDINATE COMPONENTS

Joseph P. Segre, Acton, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Original application Sept. 2, 1969, Ser. No. 854,704, now Patent No. 3,617,934. Divided and this application Feb. 12, 1971, Ser. No. 115,052

Int. Cl. G02f *1/26*

U.S. Cl. 350—150 **6 Claims**



An electro-optic crystal such as lithium niobate is formed into a half waveplate to convert tangential and radial polarization components in a laser beam to rectangular co-ordinate components. To achieve this polarization conversion a transverse electric field is applied to the crystal in an uniform strength pattern such that the direction of the field varies with the angular position in the crystal changing at the same rate as the angular rate of change of position in the crystal. Such polarization conversion devices are combined with a laser and in a laser cavity to limit laser oscillations in the laser cavity to be either only tangentially polarized or only radially polarized.

3,702,215

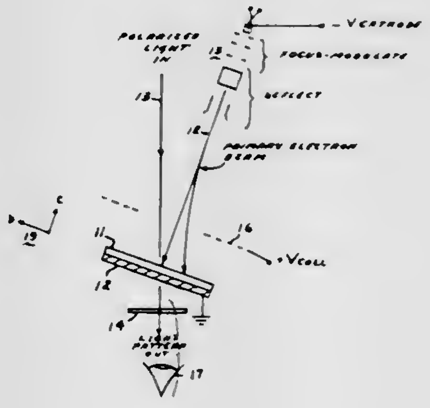
ELECTRON BEAM CONTROLLED BISTABLE FERROELECTRIC LIGHT VALVE

Stewart E. Cummins, 11810 Stafford, New Carlisle, Ohio 45344

Filed Mar. 8, 1971, Ser. No. 122,012

Int. Cl. G02f *1/26*

U.S. Cl. 350—150 **2 Claims**

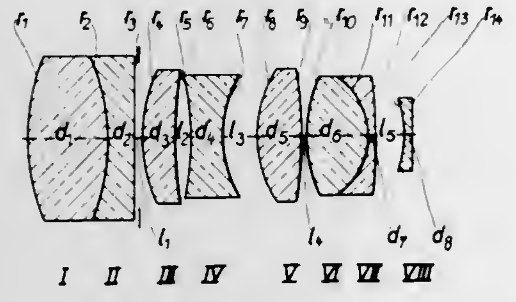


Ferroelectric domains in a crystal of ferroelectric bismuth titanate ($Bi_4Ti_3O_{12}$) are switched between two stable states, by a controlled electron beam. One state provides optical transparency and the other optical opacity, in a polarized light system. The bistables action of the ferroelectric domains in the crystal provides a multicell memory device with nondestructive optical read-out.

3,702,216

PHOTOGRAPHIC LENS OF HIGH IMAGE-RESOLVING POWER COMPRISING TWO DOUBLETS AND FOUR SINGLE LENS ELEMENTS

Harald Maenz, Jena, and Gerhard Risch, Weimar, Germany, assignors to Jenoptik Jena G.m.b.H., Jena, District of Gera, Germany
Filed Jan. 29, 1971, Ser. No. 109,266
Int. Cl. G02b *9/62*
U.S. Cl. 350—215 **3 Claims**

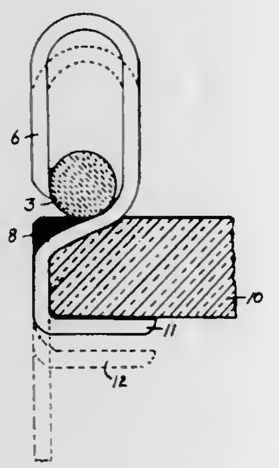


A photographic lens of high-image resolving power comprises two doublets and four single lens elements. It defines a field angle of $2\delta=10°$ with an aperture of 0.36, and a field angle of $2\delta=14°$ with an aperture of 0.25. The image errors are highly corrected, and the wave aberration lies within the Rayleigh limits. The lens members, from object side to image side, are arranged under definite conditions as follows: a positive doublet, an aperture diaphragm, a positive meniscus, a biconcave element, a biconvex element, a positive doublet, and a biconcave element.

3,702,217

OPHTHALMIC MOUNTING FOR TENSIONALLY SECURING LENSES THERETO

Louis J. Page, New York, N.Y.
(191—21 Hillside Ave., Hollis, N.Y. 11423)
Filed May 20, 1971, Ser. No. 145,447
Int. Cl. G02c *1/02*
U.S. Cl. 351—106 **3 Claims**

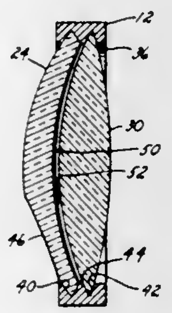


An ophthalmic mounting for tensionally securing lenses thereto by means which comprises rim members having adjustable arms attached thereto, said arms extending rearwardly from said rim members and redirected forwardly forming a loop, the forward portion of the arms being bent over to engage the front surface of the lens, said arms being adjustable up, down, in or out relative to the rim member so that inaccuracies in preparing the lenses for mounting can be compensated for.

3,702,218

TEMPORARY CATARACT FITTINGS

Robert G. Manhire, Box 235, Oldwick, N.J. 08858
Continuation-in-part of abandoned application Ser. No. 807,848, Mar. 17, 1969. This application Jan. 25, 1971, Ser. No. 109,595
Int. Cl. G02c *7/06*
U.S. Cl. 351—167 **1 Claim**

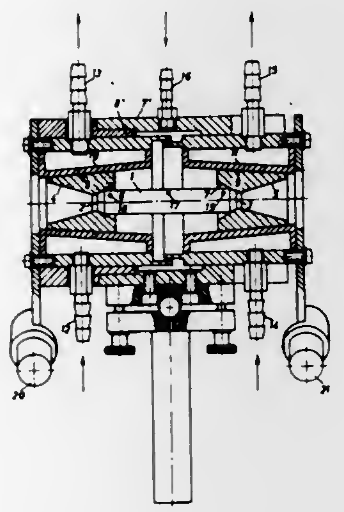


A temporary bifocal cataract fitting in which two circular plastic lenses of substantially the same diameter are removably retained within each rim of a plastic eyeglass frame, the lenses having a small but substantially uniform air space between them.

3,702,219

GRAPHITE TUBE CELL ASSEMBLIES FOR ATOMIC ABSORPTION SPECTROMETERS

Klaus Braun and Kurt Manthey, Uberlingen, and Bernhard Welz, Meersburg, Germany, assignors to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen am Bodensee, Germany
Filed Feb. 5, 1971, Ser. No. 112,855
Claims priority, application Germany, Feb. 11, 1970, P 20 06 032.6
Int. Cl. G01j *3/30;* **G01n** *21/16*
U.S. Cl. 356—244 **3 Claims**

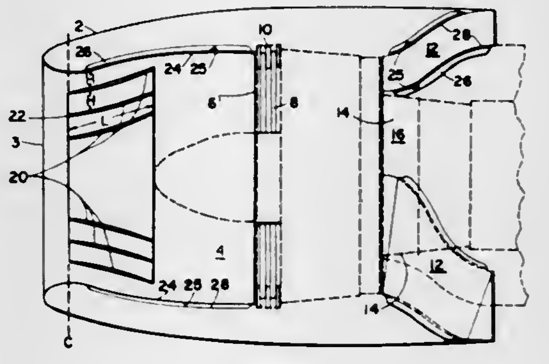


A known type of heated sample cell assembly for atomic absorption spectroscopy includes an open-ended graphite sample tube having a central hole for initially introducing the sample into the tube and for allowing an inert gas to circulate from the otherwise closed housing into the tube to protect the interior surfaces from oxidization when the device is heated, as by large electrical currents supplied from electrodes in contact with both ends of the graphite tube. The present improvement includes the addition of two further holes near the ends of the graphite tube to reduce the speed at which a given total protective gas flow causes the same amount of sample to be expelled from the open end of the tube, thereby increasing useful measuring time. Preferably the end holes are offset so as to cause the gas flow entering the interior to be substantially tangential to the inner walls of the tube so as to form a helical or cyclonic flow along these walls, thereby minimizing the possibility of ambient air flow reaching these inner wall surfaces. Advantageously, the graphite tube may have conically tapered ends, and the (also graphite) electrodes may be annular and include complementarily conically-shaped inner surfaces mating with these conical ends of the tube.

3,702,220

NOISE REDUCTION IN JET ENGINES HAVING FANS OR LOW PRESSURE COMPRESSORS

George E. Medawar, San Diego, and Felix Hom, La Mesa, Calif., assignors to Rohr Industries, Inc.
Filed Nov. 12, 1970, Ser. No. 88,541
Int. Cl. E04b *1/99;* **F01d** *29/00;* **F02k** *3/00*
U.S. Cl. 415—119 **16 Claims**



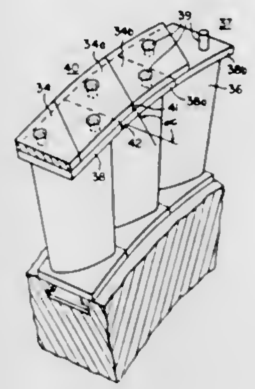
A turbofan jet engine employed in the propulsion of aircraft. The air inlet to a typical fan-jet engine is defined by the cowl and cowl lip ring which directs the incoming air to and through the fan, or low pressure compressor, having rotor and stator blades. The primary flow is directed into the combustion chamber where hot gases resulting from combustion are used to drive the fan or low pressure compressor. The secondary outer portion of the air pressurized by the fan is directed rearward around the outer edge of the inner engine defined by the inner cowl and the outer wall adjacent the combustion chamber and directed to provide a propulsive force from the engine. At least two annular splitter rings concentrically spaced are provided within the cowl forward of the fan or low pressure compressor.

3,702,221

CONTINUOUS SHROUDING-RIVETED CONSTRUCTION

Ralph J. Ortolano, Palos Verdes Peninsula, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Original application Sept. 30, 1969, Ser. No. 862,282. Divided and this application June 15, 1971, Ser. No. 153,199
Int. Cl. F01d *5/22*
U.S. Cl. 416—191 **3 Claims**

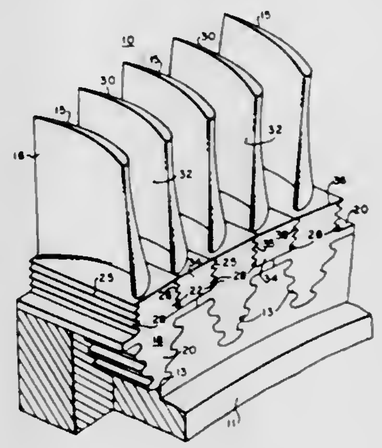
A circular shrouded rotor blade structure for an elastic fluid axial flow turbine or compressor comprising an annular row of blades and an annular series of arcuate segments associated with the blades and arranged in end-to-end relationship to form a continuous 360° shroud, wherein each pair of neighboring shroud segments is firmly riveted to a blade common to both with each segment being riveted to at least two blades. There may be more than one row of arcuate segments forming the shroud.



3,702,222

ROTOR BLADE STRUCTURE

Benjamin C. Bernales, Cincinnati, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 13, 1971, Ser. No. 106,040
Int. Cl. F01d *5/30*
U.S. Cl. 416—212 **6 Claims**



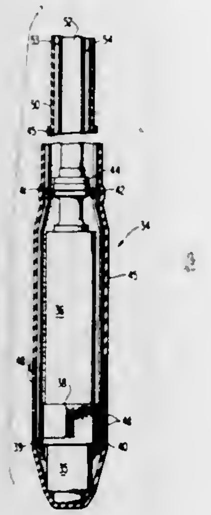
A bladed rotor structure for an elastic fluid axial flow turbine comprising an annular row of primary grooves, and a plurality of primary rotor blades of the side-entry type disposed in the grooves. Each blade has a root, the radially inner portion of the root being disposed in its corresponding groove in the rotor and the radially outer portion of each root being disposed outside of the rotor. The radially outer portion of each root has serrated edges which, together with the adjacent roots of the primary blades, jointly define an annular array of axially extending secondary grooves. Secondary rotor blades having roots corresponding in shape to the secondary grooves are inserted into the grooves, the primary and secondary blades jointly defining a transverse annular row of rotating blades.

3,702,223

HYDRAULICALLY OPERATED SYSTEM FOR SUBSURFACE OPERATIONS

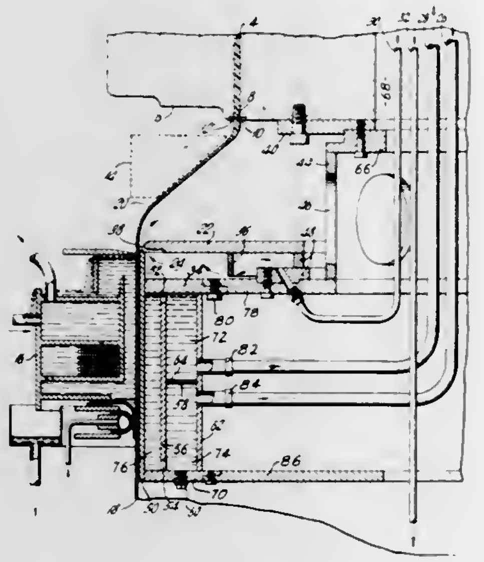
David H. Bednar, Mountain Iron, Minn., assignor to Viking Explosives & Supply Inc.
Filed Oct. 7, 1971, Ser. No. 187,327
Int. Cl. F04b *35/02, 47/08;* **E21b** *43/00*
U.S. Cl. 417—375 **15 Claims**

Provision is made for removal of blast hole liquids hydraulically thus avoiding safety hazards of electrically operated apparatus in blasting holes. Hydraulically driven submersible pump means are protected within electrically insulating boot means and connected through an abrasion resistant, electrically non-conductive sheathing cable which houses supply and discharge conduits. Reeling means at the surface provide for lowering, raising, and suspending of the submersible apparatus with novel junction block and connector means providing above ground connection for the conduit means without inhibiting of reeling of the sheathing cable and housed conduits.



3,702,224
MANDREL FOR EXTRUDED THERMOPLASTIC FILM

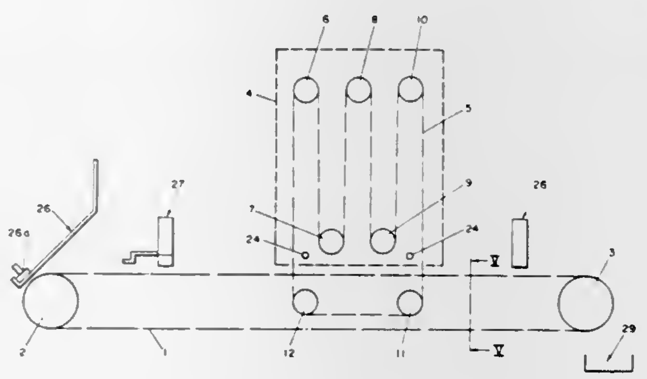
Howard C. North, Baytown, and Charles W. Williamson, Seabrook, Tex., assignors to Esso Research and Engineering Company
Continuation-in-part of application Ser. No. 887,270, Dec. 22, 1969. This application Mar. 26, 1971, Ser. No. 128,338
Int. Cl. B29d *23/04*
U.S. Cl. 425—71 **10 Claims**



In the extrusion of a thermoplastic resin through a ring-die in a generally downward direction to form a tubular film, wherein the film is partially cooled by means of a cooling gas before being drawn over a cooling and sizing mandrel, the improvement characterized by using a mandrel having a flattened top, an uncooled upper section, a cooled lower section, a tapered profile in longitudinal cross-section and an external surface texture within the limits of 50 to 1,000 microinches RMS.

3,702,225
APPARATUS FOR MOULDING LINERS OF PLASTIC MATERIAL WITHIN CONTAINER CLOSURES

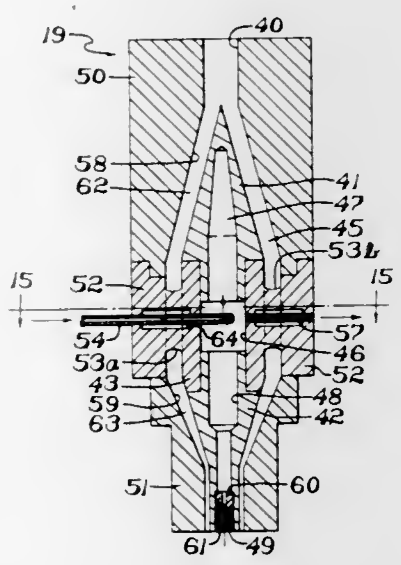
Gordon Asquith Deakin, Alan Eastwood, and Gordon Vinnicombe, all % W. R. Grace Ltd., Elneden Road, Park Royal, London NW. 10, England
Original application Oct. 28, 1968, Ser. No. 771,203, now Patent No. 3,587,819. Divided and this application May 7, 1970, Ser. No. 35,526
Claims priority, application Great Britain, Oct. 30, 1967, 49,134/67
Int. Cl. B29c *3/04, 17/14*
U.S. Cl. 425—112 **10 Claims**



The specification discloses a mechanism for transferring articles from one conveyor to another at a point where the two conveyors are moving along non-parallel paths. Studs on each conveyor engage in respective apertures in the article to support and locate the article. Preferably the conveyors are arranged to carry container closures through a closure moulding device which may also include a combined tool for severing a pellet from a rod of thermoplastic material and placing the pellet in a closure ready for cold moulding.

3,702,226
PLASTIC MOLDING

Heung T. Kim, Avon Lake, Ohio, and John P. Darby, Pompano Beach, Fla., assignors to The B. F. Goodrich Company, New York, N.Y.
Filed Jan. 20, 1971, Ser. No. 108,087
Int. Cl. B29j *5/06*
U.S. Cl. 425—326 **7 Claims**

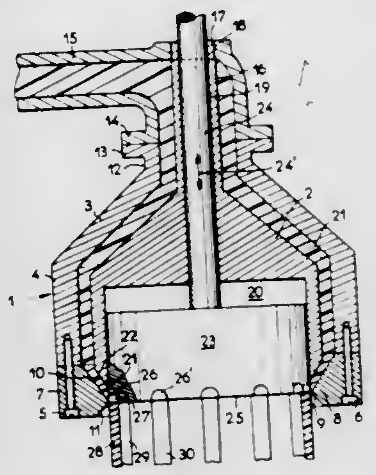


The molding of plasticized material wherein the die assembly has its mandrel cooled to restore a symmetrical heat and velocity profile to the annular melt and in addition provides means for the cooling of an adapter which divides the original plasticized melt from the extruder into two cylindrical cross sectioned streams of material for movement into two separate dies. The adapter is cooled to restore the temperature and velocity profile.

3,702,227
EXTRUSION DIE FOR THE MANUFACTURE OF NETS OF ARTIFICIAL MATERIAL

Jacques Hureau, 18 Rue de la Glaciere, Paris 13, France
Division of application Ser. No. 872,196, Oct. 29, 1969, now abandoned. This application Apr. 29, 1971, Ser. No. 138,411
Claims priority, application France, Dec. 3, 1968, 176,368; Canada, Dec. 3, 1969, 068,920; Great Britain, Feb. 21, 1971, 9,507/71
Int. Cl. B29d *23/04;* **B29f** *3/04*
U.S. Cl. 425—466 **8 Claims**

An extrusion apparatus for producing tubular articles of a solidifiable extrudable material having a tubular structure. The apparatus has a tubular member open at one end. A core member is disposed axially within the tubular member and jointly therewith defines an annular space terminating in an annular extrusion orifice opening into the interior of the tubular member adjacent the open end thereof. The core member has a surface disposed axially spaced from the open end of the tubular member defining an innermost axially disposed boundary of said extrusion orifice relative to the open end of the tubular member. The core member has a bore defining a chamber on an end thereof adjacent the open end. A piston is mounted for reciprocation in the chamber selectively and alternately actuated in operation to a first position obstructing the annular extrusion orifice and a second position unobstructing the extrusion orifice. The piston lower circumferential edge portion has extrusion notches circumferentially spaced thereon open to side surfaces of the piston and an end face confronting the open end of the tubular

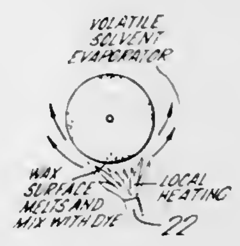


element. Separate, circumferentially spaced strands are extruded through these notches in a machine direction when the extrusion orifice is obstructed by the piston and an annular ring integral with the strands and as a continuation thereof when the extrusion orifice is unobstructed.

CHEMICAL

3,702,228
SPIRAL SOLVENT DYEING OF CANDLES

Harald Falck-Muus, Bogstadveien 8, Oslo 3, Norway
Filed Jan. 5, 1971, Ser. No. 104,001
Claims priority, application Norway, Jan. 6, 1970, 29/70
Int. Cl. C11b *3/00*
U.S. Cl. 8—6 **8 Claims**

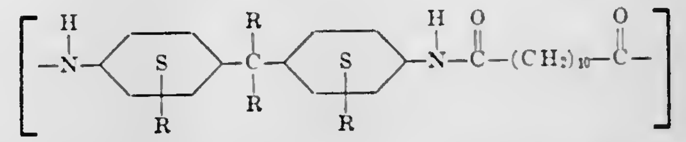

VOLATILE SOLVENT EVAPORATOR
WAX SURFACE MELTS AND MIX WITH DYE
LOCAL HEATING
22

The surface of a candle made from stearin, paraffin wax or the like is decorated by covering the surface with a fat soluble dye mixed with a volatile solvent such as turpentine; and then heating the surface locally with a source of heat such as a flame so that the dye goes into the material of the candle, which is liquified at the surface. where it floats, while the volatile solvent is driven off. When the surface of the candle is hardened, it can then be polished.

3,702,229
PRINTING OF ANIONIC DYES ON POLYCARBONAMIDES OF BIS(PARA - AMINOCYCLOHEXYL) METHANE AND DODECANEDIOIC ACID

Eugene E. Campana, Norwood, N.J., assignor to Ciba-Geigy Corporation, Greenburgh, N.Y.
No Drawing. Filed Dec. 29, 1970, Ser. No. 102,517
Int. Cl. D06p *5/04*
U.S. Cl. 8—62 **6 Claims**

Processes are provided for the printing substrates of silk-like linear, high molecular weight fibers containing at least 90% repeating units of the formula



wherein R is the same or different member of the class consisting of hydrogen and methyl with selected acid dyestuffs. By the use of selected organic carriers and dyestuffs used in conjunction with thiourea, excellent prints can be obtained. The printed substrates may be steam developed.

3,702,230
USE OF A POLYMER ADDITIVE TO IMPROVE THE OPTICAL BRIGHTENER ABSORPTION CHARACTERISTICS OF DURABLE-PRESS FABRICS

Eugene J. Blanchard, New Orleans, and Gloria A. Gautreaux and Robert J. Harper, Jr., Metairie, La., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed Jan. 7, 1971, Ser. No. 104,782
Int. Cl. D06m *15/36, 15/58*
U.S. Cl. 8—100 **6 Claims**

A cotton fabric is treated with a solution containing polyvinylpyrrolidone-polyacrylate copolymer and a crosslinking agent with suitable catalyst to produce a durable press fabric which possesses the imparted desirable quality of being able to absorb optical brighteners normally included in laundry detergents. A white fabric treated by the process of this invention improves in whiteness with repeated launderings.

When the formulation is supplemented with low amounts of polypropylene glycol and alkyl ethyleneoxide alcohol the performance of the treated grament or fabric is further enhanced.

3,702,231

KNITTED TEXTILE MATERIALS COMPRISING POLYESTER FIBERS AND HAVING OUTSTANDING SOIL RELEASE AND DURABLE PRESS PROPERTIES AND A PROCESS FOR THE PREPARATION THEREOF

Edwin L. Dale, Spartanburg, S.C., assignor to Beaunit Corporation, New York, N.Y.

No Drawing. Filed Sept. 16, 1968, Ser. No. 762,311

Int. Cl. D06m *15/36, 15/38, 15/58*
U.S. Cl. 8—115.6 **4 Claims**

Polyester knitted textile materials, such as fabrics, having outstanding soil release and durable press properties are prepared by treating the knitted material comprising polyester fibers with a sufficient amount of a water-insoluble linear addition polymer of one or more monoethylenically unsaturated monomeric compounds and containing up to about 5 percent by weight of acid, present as acrylic acid, methacrylic acid, and/or itaconic acid, in conjunction with a textile resin and a textile resin catalyst followed by the curing of the textile resin to fix the additives to the knitted fabric. The so-treated textile material or fabric may then be processed by conventional methods to garments and other textile materials for various uses having outstanding soil release and durable press properties.

3,702,232

TRIS(2-CHLOROETHYL)PHOSPHORAMIDE USED AS A CROSSLINKING AGENT FOR CELLULOSIC COMPOSITIONS

Earl J. Roberts, New Orleans, Mary Ann F. Brannan, Metairie, and Stanley P. Rowland, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application June 24, 1970, Ser. No. 49,551. Divided and this application Nov. 19, 1971, Ser. No. 200,583

Int. Cl. D06m *13/26, 13/40, 13/44*
U.S. Cl. 8—116 P **2 Claims**

Tris(2-chloroethyl)phosphoramide was prepared from ethyleneimine and phosphorus oxychloride and reacted with cotton cellulose in the form of fabric by a pad-dry-cure process in the presence of a basic salt, such as sodium carbonate. Reagent incorporation levels up to 6% by weight were achieved. Cotton fabrics modified with tris(2-chloroethyl)phosphoramide were found to have enhanced wrinkle recovery properties.

3,702,233

YTTRIUM PURIFICATION

J. R. Gump, Alma, Mich., and Tai K. Kim and Robert E. Long, Jr., Towanda, Pa., assignors to GTE Sylvania Incorporated

Filed Aug. 11, 1971, Ser. No. 170,744

Int. Cl. C22b *59/00*
U.S. Cl. 23—23 **4 Claims**

A solvent extraction process for separating yttrium from heavy rare earths having atomic number 65 through 71 is disclosed that comprises using an aminopolycarboxylic acid and a buffering agent in the aqueous phase followed by a two-step organic extraction process whereby yttrium and heavy rare earths having atomic number 65 and 67 are first separated from heavy rare earths having atomic numbers 68 through 71 and after stripping and a second extraction, a dilute mineral acid is used to strip heavy rare earths, atomic numbers 65 through 67, from the yttrium-bearing organic and purified yttrium is then recovered by a concentrated mineral acid.

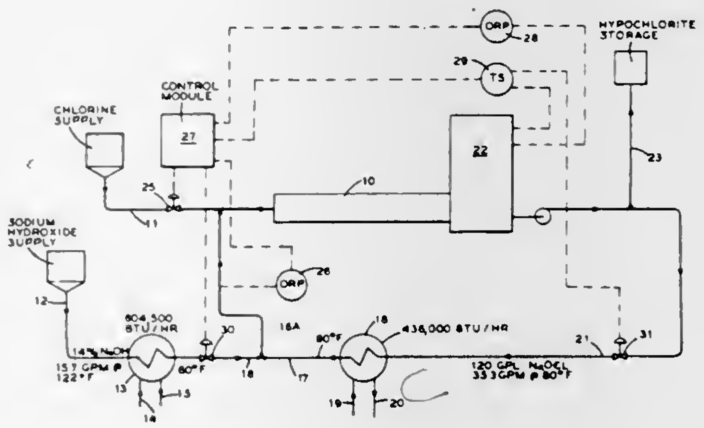
3,702,234

MANUFACTURE OF SODIUM HYPOCHLORITE

Edgar H. Pavia, 610 Poydras St., New Orleans, La. 70112

Filed Mar. 26, 1970, Ser. No. 22,802

Int. Cl. C01b *11/00;* **G01n** *27/46*
U.S. Cl. 23—86 **2 Claims**



A method for forming sodiuum hypochlorite at atmospheric conditions from sodium hydroxide and chlorine in proper proportions and under controlled conditions to prevent the escape of unreacted chlorine to the atmosphere; and to avoid the formation of sodium chlorate.

3,702,235

PROCESS FOR THE DETECTION OF HYDROGEN SULFIDE IN DRILL BIT CUTTING

Wayne S. Fallgatter, Tulsa, Okla., assignor to Cities Service Oil Company

No Drawing. Filed June 25, 1971, Ser. No. 157,057

Int. Cl. G01n *31/22, 33/24*
U.S. Cl. 23—230 R **8 Claims**

Drill bit cuttings are ground in the presence of a hydroxonium ion, subsequently vacuum filtered and rinsed with distilled water in order to provide a filtrate. The filtrate is introduced into a flask containing a zinc powder, utilized in conjunction with hydrogen chloride to provide a sweep gas of hydrogen, in order to evolve hydrogen sulfide which is then qualitatively and quantitatively detected. The process allows testing of cuttings of water or oil base muds to yield accurate determinations of amount of hydrogen sulfide originally present in the drill bit cuttings.

3,702,236

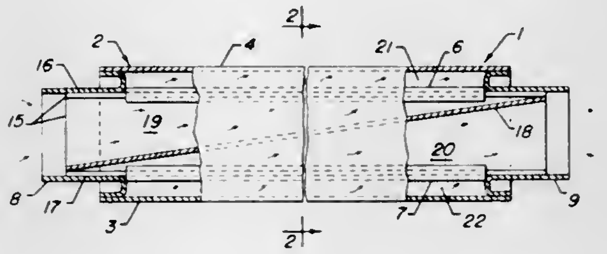
CATALYTIC CONVERTER

Leroy E. Fessler, Bartlett, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 19, 1971, Ser. No. 116,773

Int. Cl. F01n *3/14;* **B01j** *9/04*
U.S. Cl. 23—288 F **6 Claims**

A catalytic converter for treating an engine exhaust stream which embodies a pair of passageways disposed along the free side of the catalyst compartment within an outer housing. The passageways communicate with manifold compartments formed between the housing and the perforated partitions which form the catalyst compartment, over substantially the total length of each passageway.



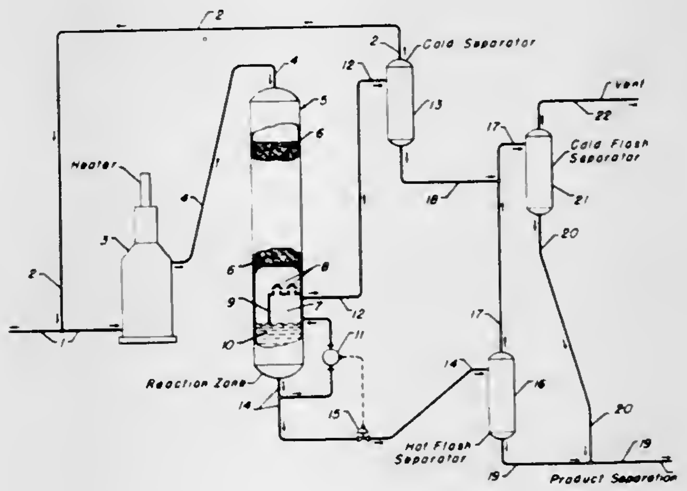
3,702,237

HYDROCARBON CONVERSION APPARATUS

Charles H. Watkins, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed July 2, 1970, Ser. No. 51,900

Int. Cl. B01j *9/04*
U.S. Cl. 23—288 R **1 Claim**



A hydrocarbon conversion apparatus or vessel for use in mixed-phase, fixed-bed catalytic systems. The vessel is equipped with an internal vapor-liquid separation compartment from which a principally vaporous phase is removed. Removal of this vaporous phase significantly inhibits foaming in the outlet line through which the product effluent is withdrawn.

3,702,238

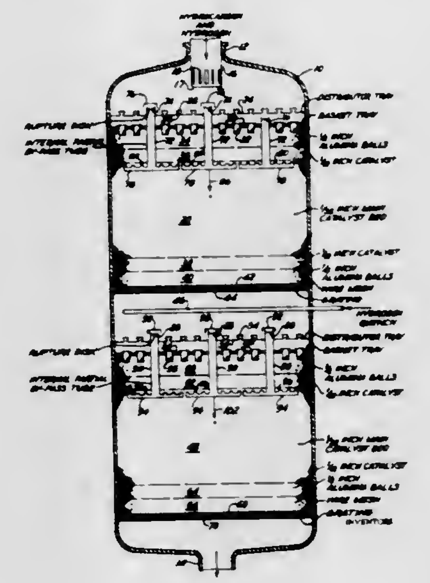
APPARATUS FOR BY-PASSING REACTANTS TO THE INTERIOR OF A CATALYST BED

John M. Armistead, Bethel Park, Pa., and Joseph K. Kosiba, Port Arthur, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Mar. 18, 1970, Ser. No. 20,744

Int. Cl. B01j *9/04;* **C10g** *23/02*
U.S. Cl. 23—288 R **6 Claims**

An apparatus for reactant by-pass of an encrusted layer at the top of a catalyst bed. A normally closed conduit extends from the upstream end of the bed to the interior of the bed near the top thereof. A flow direction reversal occurs at the discharge of the conduit. An increase in pressure drop induces opening of the conduit whereupon reactants surge against the underside of the crust formation so that reactant flow tends to unwedge deposits forming the crust.



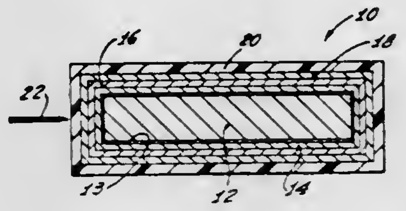
3,702,239

MAGNETIC STORAGE MEDIUM

Stanley S. Nagy, Studio City, and Floyd B. Humphrey, Pasadena, Calif., assignors to Sperry Rand Corporation

Filed Mar. 17, 1969, Ser. No. 807,899

Int. Cl. G11b *5/00;* **C23b** *5/50*
U.S. Cl. 29—195 **18 Claims**



A magnetizable storage member is formed from a substrate and thin layers deposited on the substrate. The first thin layer includes an element such as nickel having hard properties. A thin chemically inert layer such as gold may be disposed on the first thin layer. A third very thin layer of cobalt is disposed on the gold layer or directly on the first thin layer. The cobalt has a higher thickness when the storage member is to record and reproduce digital information. The cobalt has a decreased thickness when the storage member is to record and reproduce analog information having relatively high frequencies such as color information for a television receiver. A hard, thin, nonmagnetic protective coating such as silicone may be disposed on the storage member and may be made from a silicone.

3,702,240

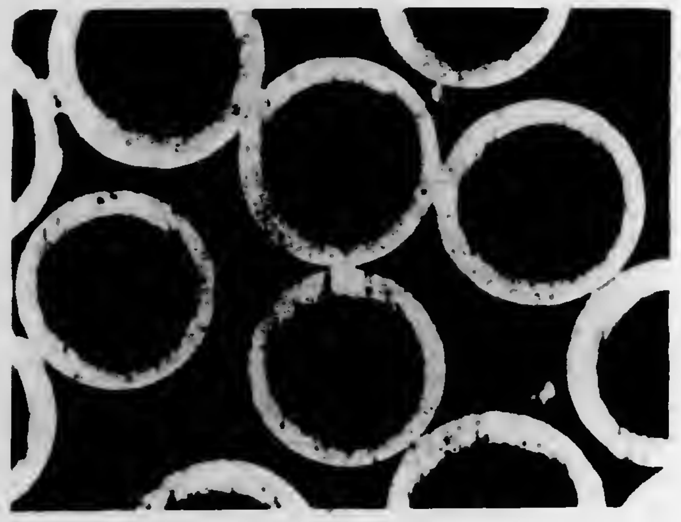
METHOD OF MAKING IMPACT RESISTANT INORGANIC COMPOSITES

August C. Siefert, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation

Continuation-in-part of abandoned application Ser. No. 820,015, Apr. 28, 1969. This application Mar. 4, 1971, Ser. No. 120,932

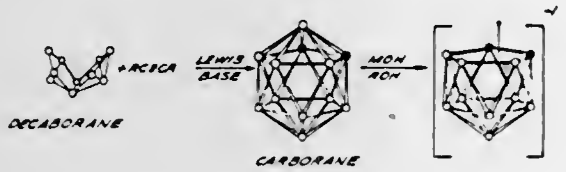
Int. Cl. C03c *23/20*
U.S. Cl. 65—4 **10 Claims**

A method of making an impact resistant composite comprising: coating glass fibers with metal, and solidifying a matrix of glass around the metal coated glass fibers. The coating has a thickness between 0.00005 and 0.001 inch, the fibers are arranged in a generally parallel manner in which the fibers occupy from approximately 20 to 70 percent of the volume and the glass has a softening point below the melting point of the metal coating.



3,702,241
PESTICIDE COMPOSITIONS CONTAINING DICARBADODECAHYDROUNDECABORATES

Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
Filed Apr. 11, 1968, Ser. No. 720,730
The portion of the term of the patent subsequent to Nov. 10, 1987, has been disclaimed
Int. Cl. A01n *9/00*
U.S. Cl. 71—79 **10 Claims**



Pesticidal compositions containing an inert pesticidal carrier and an effective amount of an active toxicant comprising dicarbadodecahydroundecaboric acid or its alkali metal or ammonium salts, wherein the active ingredient is the dicarbadodecahydroundecaborate anion having the following empirical formula:

$$[(BX)_m(BR_1)_nCR_2CR_3]^{-1}$$

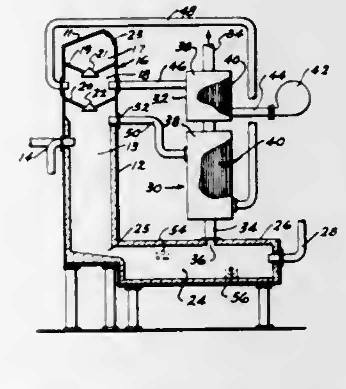
wherein:

X is halogen or hydrogen;
R_1 has from 1 to 10 carbon and is alkyl, aryl, alkenyl or halo or carboxy derivatives thereof;
R_2 and R_3 are halogen, hydrogen or alkyl, aryl, alkenyi, carboxyl or cycloalkyl having from 1 to about 10 carbons;
n is 0, 1 or 2; and
$m+n=9$.

The pesticides are active for a variety of biocidal purposes, e.g., as post- and pre-emergence herbicides, as fungicides, as insecticides and as bactericides.

3,702,242
DOWNDRAFT CUPOLA INCORPORATING MEANS TO PREHEAT THE CHARGE

John Henry Fernandes, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed July 21, 1971, Ser. No. 164,730
Int. Cl. C21b *9/14, 11/02, 7/18*
U.S. Cl. 75—43 **14 Claims**



A downdraft cupola organization is disclosed in which means are provided to preheat the charge to the cupola in order to stabilize the level of ignition of the coke bed within the cupola furnace. The charge is preheated by air raised to an elevated temperature by indirect heat exchange with the effluent gas from the cupola. The same air used to preheat the charge is reheated and employed as blast air within the cupola furnace.

3,702,243
METHOD OF PREPARING DEOXIDIZED STEEL

Robert S. Miltenberger, Weirton, W. Va., assignor to National Steel Corporation
No Drawing. Filed Apr. 15, 1969, Ser. No. 816,418
Int. Cl. C21c *7/06*
U.S. Cl. 75—49 **16 Claims**

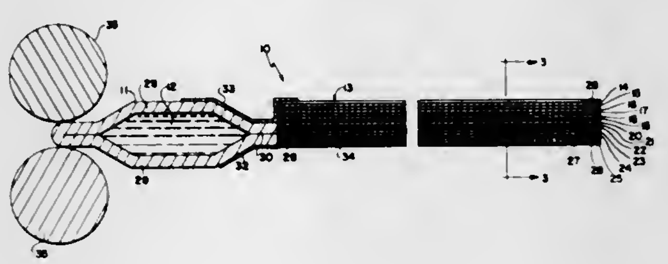
An addition agent is provided for deoxidizing and recarburizing vacuum degassed steel which consists essentially of carbon, aluminum and/or silicon, manganese and iron, and a binder therefor when in the form of briquettes. The invention also provides a novel method of deoxidizing and recarburizing vacuum degassed steel which utilizes the addition agent of the invention. In one variant of the invention, a melt of steel prepared by a basic oxygen process is vacuum degassed and then deoxidized and recarburized with the addition agent of the invention to produce molten killed steel having an ultra low oxygen content which may be continuously cast to produce steel shapes with properties similar to rimmed steel.

3,702,244
DIFFUSION TRANSFER PHOTOGRAPHIC PROCESSES AND ELEMENTS UTILIZING pH-SENSITIVE AGENTS TO PREVENT FOGGING BY EXTRANEOUS ACTINIC RADIATION DURING DEVELOPMENT

Stanley M. Bloom, Waban, Alan L. Borror, Arlington, and Paul S. Huyffer and Paul T. MacGregor, Lexington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Jan. 21, 1971, Ser. No. 108,260
Int. Cl. G03c *7/00, 5/54, 1/40*
U.S. Cl. 96—3 **159 Claims**

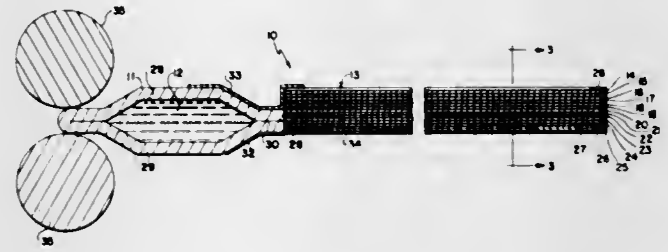
This invention relates to photography, and more particularly, it relates to the use of certain indicator dyes derived from indoles as optical filter agents to protect a selectively exposed photosensitive material from post-exposure fogging in photographic processes where development of the photosensitive material is conducted in the

presence of extraneous incident light. These indicator dyes contain an indole radical, a second aromatic radical and a ring-closing moiety bonded to the aromatic radical and to the 2- or 3-position of the indole radical. At a first pH they have a highly colored, light-absorbing form capable of absorbing radiation within a predetermined wavelength range in the shorter wavelength region of the visible spectrum and at a second pH have a colorless form that is substantially non-light-absorbing in the visible spectrum. By selecting a dye from this class which is in its light-absorbing form at the pH at which development is performed, protection of the exposed photosensitive material from radiation actinic thereto is afforded within the wavelength range absorbed by the dye and subsequent to at least the initial stages of development, the dye may be rendered substantially colorless by adjusting the pH to permit viewing of the final image.



3,702,245
PHOTOGRAPHIC DIFFUSION-TRANSFER PROCESSES AND ELEMENTS UTILIZING pH-SENSITIVE OPTICAL FILTER AGENTS TO PREVENT FOGGING BY EXTRANEOUS ACTINIC RADIATION DURING DEVELOPMENT

Myron S. Simon, West Newton, and David P. Waller, Arlington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Jan. 4, 1971, Ser. No. 103,392
Int. Cl. G03c *5/54, 7/00, 1/40*
U.S. Cl. 96—3 **103 Claims**



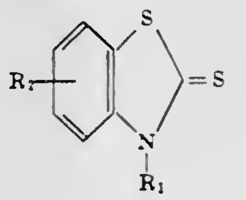
This invention relates to photography, and more particularly, it relates to the use of certain indicator dyes derived from phenols as optical filter agents to protect a selectively exposed photosensitive material from post-exposure fogging in photographic processes where development of the photosensitive material is conducted in the presence of extraneous incident light. This class of phenol indicator dyes contain a ring-closing moiety bonded to two hydroxy-substituted carbocyclic aryl radicals selected from two p-hydroxyphenyl radicals each possessing a hydrogen-bonding group adjacent to the p-hydroxy group and two p-hydroxynaphthyl radicals at least one of the p-hydroxynaphthyl radicals possessing a hydrogen-bonding group adjacent to the p-hydroxy group. At a first pH in alkaline solution they have a highly colored, light-absorbing form capable of absorbing radiation within a predetermined wavelength range in the longer wavelength region of the visible spectrum and at a second less alkaline pH have a colorless form that is substantially non-light-absorbing in the visible spectrum. By selecting a dye from this class which is in its light-absorbing form at the pH at which development is performed, protection of the exposed photosensitive material from radiation actinic thereto is afforded within the wavelength range absorbed by the dye and subsequent to at least the initial stages of development, the dye may be rendered substantially colorless by adjsting the pH to permit viewing of the final image.

In a preferred embodiment, the phenol dye or dyes are used in conjunction with a second dye or dyes having a principal absorption in at least a partially different wavelength range, and the phenol dye(s) and second dye(s) together afford protection over the wavelength range of about 400 nm. to 700 nm.

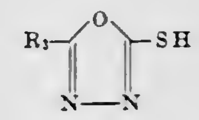
3,702,246
DIFFUSION TRANSFER PROCESS

Yasushi Ohyama, Takatsuki, and Kiyoshi Futaki and Senji Tosa, Kyoto, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan
No Drawing. Filed Apr. 15, 1970, Ser. No. 28,989
Claims priority, application Japan, Apr. 16, 1969, 44/29,042
Int. Cl. G03c *5/52*
U.S. Cl. 96—29 R **10 Claims**

In a silver complex diffusion transfer process, an improved pure black color tone and rapid transferability are simultaneously attained by carrying out the development in the presence of toners, selected from combinations of at least one of 3-alkylbenzothiazoline-2-thione derivatives (A) and at least one of 2-mercapto-1,3,4-oxadiazole derivatives (B),



(A)



(B)

wherein R_1 is an alkyl group having not more than 5, R_2 is hydrogen, alkyl group having not more than 3 carbon atoms or alkoxy group having not more than 3 carbon atoms, and R_3 is an alkyl group having not more than 8 carbon atoms, aryl or substituted aryl group.

3,702,247
COLOR PHOTOGRAPHIC PROCESS USING A BLEACH-FIX SOLUTION CONTAINING A SELENOSULFATE

Alun Trefor Rhys Williams and David Gerald Alcock, Ilford, England, assignors to Ilford Limited, Ilford, Essex, England
No Drawing. Filed Jan. 12, 1971, Ser. No. 105,955
Claims priority, application Great Britain, Jan. 13, 1970, 1,616/70
Int. Cl. G03c *7/00*
U.S. Cl. 96—55 **9 Claims**

This application describes a colour development process for colour silver halide photographic material, wherein the material after development is treated with a bleach-fix solution which contains a mild oxidising agent, a silver halide solvent and as a bleach-fix accelerator a water-soluble specified selenosulfate.

3,702,248
BLEACH-FIX ADDITIVES

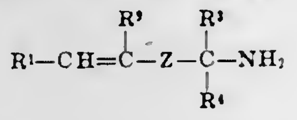
David Gerald Alcock, John Colin Brown, Enzo Piccotti, and Norman John Iungius, Ilford, England, assignors to Ilford Limited, Ilford, Essex, England
No Drawing. Filed Dec. 22, 1970, Ser. No. 100,839
Claims priority, application Great Britain, Dec. 23, 1969, 62,680/69
Int. Cl. G03c *7/16*
U.S. Cl. 96—22 **14 Claims**

This application describes a bleach-fix bath for use in processing colour photographic material comprising a mild oxidising agent, a silver-halide solvent and a bleach-fix accelerator which is a water soluble selenium compound selected from defined classes of selenosemi-carbazides and analogous bis-compounds, 1,2,4-triazole-3-selenols and 5,5-bis, 1,2,4-triazole-3-selenols, the invention including the baths per se and their use in colour processing of photographic material.

3,702,249
PHOTOGRAPHIC ELEMENT COMPRISING AMINE-CONTAINING POLYMERS

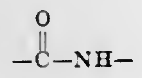
Wayne A. Bowman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Aug. 3, 1970, Ser. No. 60,709
Int. Cl. G03c *1/04*
U.S. Cl. 96—84 R **5 Claims**

New addition homo- or copolymerizable ethylenically unsaturated monomers containing primary amino groups which do not enter into or interfere with the polymerization of the formula:



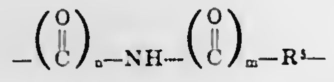
$$R^1-CH=\overset{R^2}{\overset{|}{C}}-Z-\underset{\underset{R^4}{|}}{\overset{R^3}{\overset{|}{C}}}-NH_2$$

where R^1 is hydrogen or carboxyl; R^2 is hydrogen, methyl or ethyl; each of R^3 and R^4 is an alkyl group of 1 to 12 carbon atoms; and Z is a divalent group containing at least one



$$-\overset{O}{\overset{\|}{C}}-NH-$$

group and having the formula



$$-\left(\overset{O}{\overset{\|}{C}}\right)_n-NH-\left(\overset{O}{\overset{\|}{C}}\right)_m-R^5-$$

where each of *n* and *m* is 0 or 1, and *n* is 0 when *m* is 1 and *m* is 0 when *n* is 1, and R^5 is a divalent organic material selected from the group consisting of alkylene of 1 to 20 carbon atoms, azaoxoalkylene of 2 to 20 carbon atoms, cycloalkylene of 5 to 14 carbon atoms, and alkylenecarbamoylphenylene with the alkylene group containing 1 to 20 carbon atoms, and the acid addition salts thereof, are produced by reaction of an ethylenically unsaturated carboxylic anhydride or N-alkenyl dicarboximide with the corresponding diamine. The homo- and copolymers of these monomers are useful in photography.

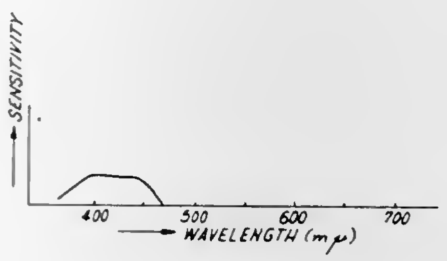
3,702,250
DIAZO COATING SOLUTIONS

Walker F. Hunter, Hilton, and John M. McCabe, Pittsford, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Continuation-in-part of abandoned application Ser. No. 679,234, Oct. 30, 1967. This application May 4, 1970, Ser. No. 34,540
Int. Cl. C23f *11/04, 11/08;* **G03c** *1/60*
U.S. Cl. 96—91 R **7 Claims**

The corrosive effect that diazo salt solutions exhibit on metallic surfaces is found to be substantially retarded by the incorporation of small amounts of propylene oxide and/or nitrite ions in the diazo solutions.

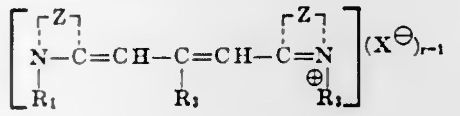
3,702,251
LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC EMULSION FOR MICROFILM USE

Shui Sato, Kaiichiro Sakazume, and Tsuneo Suga, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed Dec. 9, 1968, Ser. No. 782,169
Int. Cl. G03c *1/14*
U.S. Cl. 96—124 **6 Claims**



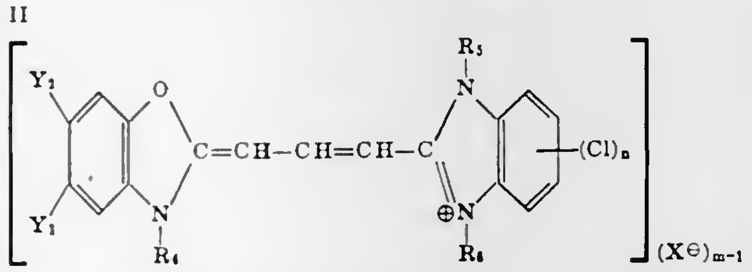
Silver halide photographic emulsions for microfilm use are sensitized by incorporating thereinto, two or more dyes of the Formula (I) and one compound of the Formula (II) in combination:

(I)



$$\left[\underset{R_1}{\overset{\ulcorner Z \urcorner}{N}}-C=CH-\underset{R_2}{C}=CH-C=\underset{\oplus R_3}{N}\right](X^{\ominus})_{r-1}$$

II

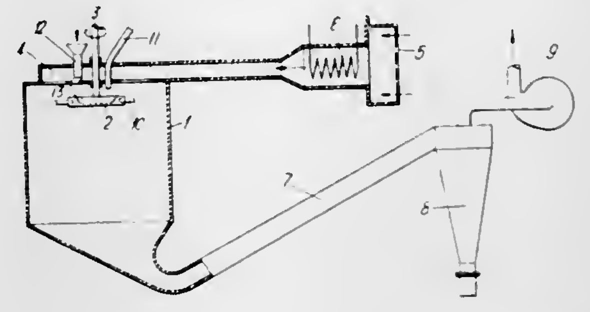


wherein R_1, R_3, R_4 and R_6 are independently selected from the group consisting of lower alkyl group, a carboxyalkyl group or a sulfoalkyl group, with the proviso that at least one of R_1, R_3, R_4 and R_6 is a carboxyalkyl, sulfoalkyl or sulfalkoxyalkyl group; R_2 is hydrogen atom or a lower alkyl group; R_5 is a lower alkyl group; Y is hydrogen atom, chlorine atom, a lower alkyl group or a lower alkoxy group; Y_2 is hydrogen atom or a lower alkyl group with the proviso that when Y_1 is chlorine, Y_2 is methyl; Z is a group capable of forming, together with the adjacent nitrogen and carbon atoms, a heterocyclic ring; X is an anion; and 1, *n* and *m* are each 1 or 2.

3,702,252
SPRAY DRYING SOLID PARTICLES OF SUGAR AND RECYCLED CRUMB PRODUCT WITH LIQUID COMPONENT OF WATER, SUGAR COCOA MATERIAL, AND MILK SOLIDS TO PRODUCE CHOCOLATE CRUMB

Preston Leonard Veltman, Clarksville, Md., and Herman van Brederode and Johannes C. J. Verdonk, Koog-Zaandijk, Netherlands, assignors to N.V. Cocoafabriek de Zaan, Koog-Zaandijk, Netherlands
Filed July 7, 1970, Ser. No. 53,029
Int. Cl. A23g *1/00*
U.S. Cl. 99—23 **14 Claims**

A process for preparing chocolate crumb, especially milk chocolate crumb, by forming the ingredients (for example sugar and cocoa butter, together with milk solids when making white or milk chocolate or with the cocoa butter in the form of cocoa liquor when making sweet or milk chocolate) into separate liquid and solid phases, and spray drying the liquid phase onto the solid phase, preferably in a centrifugal type spray drier. The spray dried product crumb is removed from the spraying zone by a current of heated air. Some of the crumb produced is preferably recycled as the solid phase. The solid phase may therefore include micro fine particles of sugar and recycled crumb product while the liquid phase may include water, cocoa butter, and milk solids.



3,702,253
FLAVOR MODIFIED SOLUBLE COFFEE

Max Winter, Geneva, Fritz Gautschi, Vaud, and Ivon Flament and Max Stoll, Geneva, Switzerland, and Irving M. Goldman, Niantic, Conn., assignors to Firmenich & Cie, Geneva, Switzerland
No Drawing. Continuation of application Ser. No. 543,069, Apr. 18, 1966, which is a continuation-in-part of application Ser. No. 452,342, Apr. 30, 1965. This application Sept. 8, 1970, Ser. No. 70,560
Int. Cl. A23f *1/04, 1/08, 1/26*
U.S. Cl. 99—71 **1 Claim**

Enhancement of coffee flavor in a soluble coffee composition is achieved by addition of a small but effective amount of one or more compounds taken from pyrazine sulfur compounds, pyradine sulfur compounds, furan sulfur compounds, phenol and phenol ether compounds, and furan ether compounds.

3,702,254
MULTILAYERED STARCH-CONTAINING DESSERT

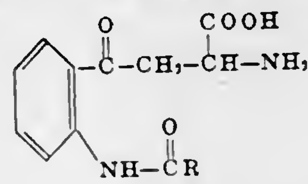
Robert R. Cassanelli, Yorktown Heights, Ronald P. Wauters, Vails Gate, and Anastasia C. Wirchansky, Yonkers, N.Y., and Clement R. Wyss, Park Ridge, N.J., assignors to General Foods Corporation, White Plains, N.Y.
No Drawing. Filed May 20, 1970, Ser. No. 39,854
Int. Cl. A23l *1/04, 1/14*
U.S. Cl. 99—139 **6 Claims**

A multilayered and multitextured pudding-like dessert is prepared from a shelf-stable, single package, powdery mix containing a gelatin-pregelatinized starch setting system and an emulsified fat system. When whipped with boiling water and diluted with milk or water, a multilayered dessert, having a pudding-like texture bottom and a creamy topping, is produced.

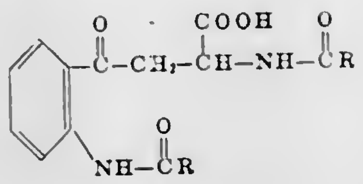
3,702,255
KYNURENINE DERIVATIVES AS SWEETENING AGENTS

John W. Finley, Walnut Creek, Calif., assignor to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed Aug. 21, 1970, Ser. No. 66,083
Int. Cl. A23l *1/26*
U.S. Cl. 99—141 A **8 Claims**

Edible materials, particularly food products, are sweetened by the incorporation of a kynurenine derivative responding to either of the following formulas:



wherein R is H or lower alkyl.



wherein each R is H or lower alkyl.

3,702,256
MARINE ANTIFOULING ADDITIVE

Louis M. Stevens, Ruskin, Fla., assignor to L. M. Stevens Corporation, Ruskin, Fla.
No Drawing. Filed Apr. 26, 1971, Ser. No. 137,709
Int. Cl. C09d *5/14, 5/16*
U.S. Cl. 106—15 AF **2 Claims**

A marine anti-fouling additive to enhance an existent anti-fouling paint formulation or to make an existent paint formulation anti-fouling consisting of said paint formulation and 30% to 60% by weight of copper naphthenate and 0.5% to 5.0% by weight of formaldehyde.

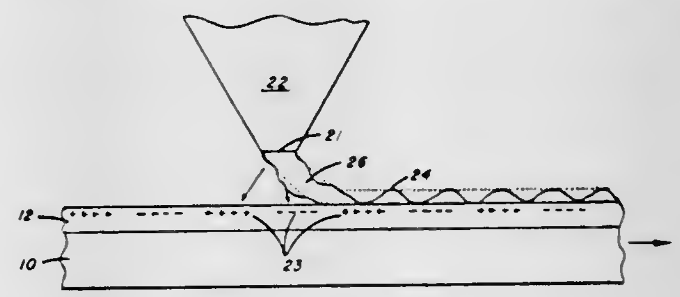
3,702,257
MANUFACTURE OF LIGHTWEIGHT AGGREGATE

Ely Koning, 21 Aletta Court, Celliers St., Sunnyside, Pretoria, Transvaal, Republic of South Africa
Continuation-in-part of application Ser. No. 726,601, May 3, 1968. This application Mar. 31, 1970, Ser. No. 24,086
Claims priority, application South Africa, Apr. 3, 1969, 69/2,389; May 30, 1969, 69/3,894
Int. Cl. C08h *17/06*
U.S. Cl. 106—288 B **2 Claims**

Lightweight aggregate is manufactured by pelletizing fly ash. A binder is used comprising an oil in water emulsion with emulsifying agent. Heavy fuel oil is preferred and molasses can be added. Emulsifying agent is a cationic amine with an acid. The outer surface of the pellets is preferably sprayed with fuel oil before subjecting to heat treatment. Alumina content is supplemented to at least 20%, silica content to at least 40%, carbon content to at least 5%, iron oxide content to at least 3%, to form mullite at elevated temperature. Heat treatment preferably includes an initial stage when carbon is burnt, a second stage when sintering occurs with formation of mullite and a third stage when stress relieving occurs.

3,702,258
WEB TREATMENT METHOD

Carl B. Gibbons and William C. Kerr, Rochester, and Roger H. Maddocks, Hilton, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 5, 1969, Ser. No. 804,470
Int. Cl. B44d *1/12;* **G03c** *1/74*
U.S. Cl. 117—34 **4 Claims**



A web with a plastic surface is disclosed as being exposed to an A.C.-produced corona thereby to increase its printability and coatability. As a result of such treatment the web surface undesirably acquires patterns of charge. A circuit technique is disclosed for so erasing such charge patterns that the web surface is assuredly left substantially uncharged.

3,702,259
CHEMICAL PRODUCTION OF METALLIC SILVER DEPOSITS

Robert P. Nielsen, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.
Filed Dec. 2, 1970, Ser. No. 94,366
Int. Cl. B01j *11/20*
U.S. Cl. 117—37 R **10 Claims**

Deposits of metallic silver are produced on surfaces of solid objects in the form of uniquely uniform, adherent, fine particles by coating the surfaces of the objects with a solution containing a silver salt of a carboxylic acid and certain organic amine solubilizing/reducing agents, such as mixtures of ethylenediamine and ethanolamine. The coated object is then heated to dry the coating and to reduce the silver present in the coating to metallic silver. In one application, this invention is used to chemically produce metallic silver deposits uniformly on interior and exterior surfaces of porous bodies, especially porous refractory catalyst supports. These supported silver products are effective as catalysts for the direct partial oxidation of ethylene to ethylene oxide.

3,702,260
COATED POLYESTER FIBERFILL

Clarence V. Jayne, Gazie K. Ragep, and James D. Templeton, Durham, N.C., assignors to Beaumit Corporation, New York, N.Y.
No Drawing. Filed Jan. 18, 1971, Ser. No. 107,463
Int. Cl. B44d *5/00;* **D02** *1/00*
U.S. Cl. 117—100 C **4 Claims**

Polyester fiberfill having improved compressional recovery is provided comprising crimped polyester staple fiber having cocrystallized on the surface thereof a copolyester comprising about 20 to 95 percent by weight of polyoxyalkylene units and about 80 to 5 percent by weight of ester units identical to those present in the polyester staple fiber substrate. This improved polyester fiberfill is prepared by wet treating uncrimped polyester fiber with the copolyester in order to provide a coating thereon of the copolyester, drawing the treated fiber if not previously drawn, heat treating the coated fiber to fix the copolyester to the fiber surface, crimping the coated fiber and thereafter processing the coated crimped fiber into fiberfill by conventional methods for use as a filler for articles of manufacture, such as pillows, upholstery and the like.

3,702,261
METHOD OF PROVIDING SUBSTRATES WITH STIFF REINFORCING MATERIAL

Frank Feakes, Lexington, and Gabriel E. Padawer, Brookline, Mass., assignors to National Research Corporation, Worcester, Mass.
Filed Jan. 22, 1969, Ser. No. 792,969
Int. Cl. C23c *11/00*
U.S. Cl. 117—106 R **10 Claims**

Structural composites utilizing high stiffness reinforcement are made up of laminated elements. Each basic laminated element is made by vacuum coating opposed faces of a substrate in alternation with several layers of coating applied to each face to achieve total coating thickness. The resultant product is an improved laminate of flat, high strength reinforcing layers of uniform thickness.

3,702,262
CORROSION PROTECTION OF BURIED METAL OBJECTS

William Harry Culver, Bryan, Tex., assignor to Pennsalt Chemicals Corporation, Philadelphia, Pa.
No Drawing. Filed Apr. 1, 1969, Ser. No. 812,403
Int. Cl. C23f *15/00*
U.S. Cl. 117—121 **8 Claims**

Ferrous metal objects, e.g., tanks and pipe, are wrapped in flexible wrapping material that is coated or impregnated with calcium arsenate to protect the metal from corrosion when buried in the soil.

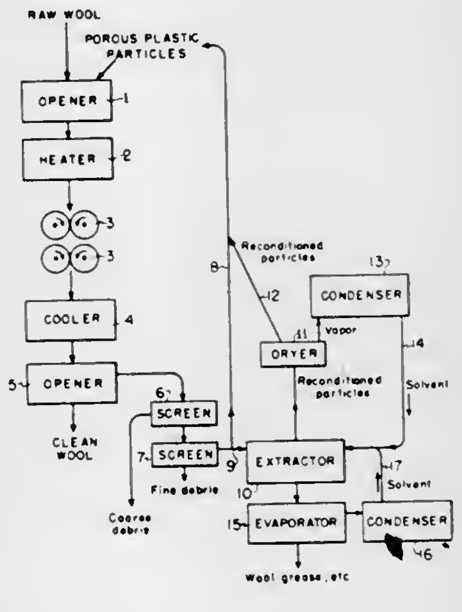
3,702,263
PROCESS FOR ELECTROLESSLY PLATING MAGNETIC THIN FILMS

David W. Hall, Poughkeepsie, John A. Lindholm, Newburgh, Lubomyr T. Romankiw, Millwood, and Arnold F. Schmeckenbecher, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation-in-part of abandoned application Ser. No. 634,531, Apr. 28, 1967. This application Feb. 20, 1970, Ser. No. 13,233
Int. Cl. H01f *10/00*
U.S. Cl. 117—240 **2 Claims**

A process for electrolessly plating substrates with thin films of magnetic material which is carried out in a temperature range which includes room temperature. The process includes the immersion of a substrate in an aqueous solution which contains iron ions and at least another metal ion such as nickel, which upon deposition form the magnetic material. A reducing agent such as sodium hypophosphite is provided in the bath in an amount sufficient to cause deposition of the metals in small grain sizes. Sufficient hydroxyl ions are also provided to maintain the bath in conditions which range from slightly acidic to highly alkaline. The bath is then maintained in a temperature range which includes room temperature over which range thin films having a characteristic silvery finish indicative of small grain size are produced. The process also includes the step of aging a ferrous bath for a period of time sufficient to convert the ferrous ions to stabilize the bath. The above-mentioned constituents and other complexing and buffering agents which prevent the precipitation of the metals from solution are present in the solution in selected concentrations which permit the plating of small grain size magnetic films at low temperature.

3,702,264
PROCESS FOR CLEANING WOOL

George H. Robertson, Albany, Calif., assignor to the United States of America as represented by the Secretary of Agriculture
Filed Apr. 12, 1971, Ser. No. 132,948
Int. Cl. D06g *1/00;* **D06l** *1/00*
U.S. Cl. 134—7 **12 Claims**



Grease, suint, and other impurities are removed from raw wool by a novel procedure. Example: Raw wool is opened, commingled with particles of a plastic foam, heated, pressed, and the resulting clean wool separated from the plastic particles containing absorbed impurities.

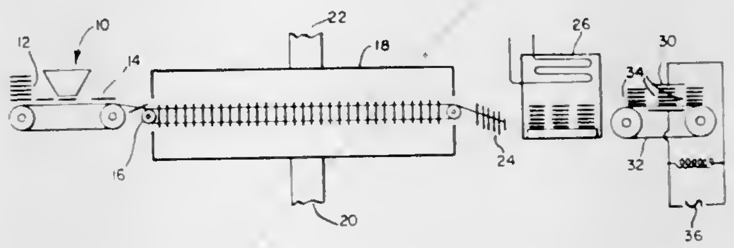
3,702,265
LEAD-ACID STORAGE BATTERY PASTE

Richard N. Snyder, Anderson, and Ellis G. Wheadon, Yorktown, Ind., assignors to General Motors Corporation, Detroit, Mich.
No Drawing. Filed June 25, 1971, Ser. No. 157,003
Int. Cl. H01m *39/00*
U.S. Cl. 136—26 **5 Claims**

Lead-acid storage battery paste containing battery makers lead oxides, a first bulking agent such as carboxymethylcellulose, and less than about 4% by weight of a second bulking agent comprising hollow, multicellular, siliceous amorphous globules having friable walls.

3,702,266
METHOD FOR PROCESSING PASTED LEAD ACID BATTERY PLATES

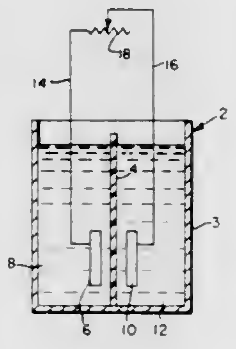
Joseph C. Duddy, Trevose, Pa., assignor to ESB Incorporated
Filed Nov. 12, 1970, Ser. No. 88,945
Int. Cl. H01m *35/26*
U.S. Cl. 136—33 **14 Claims**



A method for processing freshly pasted lead acid storage battery plates prior to formation is described in which the plates are first rapidly frozen by exposure to sub-zero temperatures and then warmed, preferably by exposure to high frequency radiation. The plates may be stored for any length of time in the frozen state.

3,702,267
ELECTROCHEMICAL CELL CONTAINING A WATER-WETTABLE POLYTETRAFLUOROETHYLENE SEPARATOR

Walter Gustav Grot, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed June 15, 1970, Ser. No. 46,289
Int. Cl. H01m *3/02*
U.S. Cl. 136—146 **5 Claims**



Polytetrafluoroethylene is provided containing from 20 to 95% by weight of inorganic particulate solids which are characterized by a particle diameter of no greater than 0.2 micron, a bulk density no greater than of 0.25 gm./cm.^{3}, and a specific surface area of at least 20 m.^{2}/gm. The particulate solids impart a high degree of microporosity and wettability which makes the polymer useful as a filter or as an ion permeable separator in electrochemical cells.

3,702,268
SAW BLADE STEEL AND SAW BLADES OR SAW-BLADE STRIP MADE THEREFROM

Klas-Erik Jakenberg, Hagfors, Sweden, assignor to Uddeholms Aktiebolag, Hagfors, Sweden
Filed May 23, 1969, Ser. No. 827,279
Claims priority, application Sweden, May 31, 1968, 7,334/68
Int. Cl. C21d *7/00, 9/24*
U.S. Cl. 148—12 **15 Claims**

There is provided a steel for making saw blades, and a saw blade made from the steel. The steel having an analysis of up to 20% Cr, 0.2–1.5% C, and a maximum of 6% additional alloying elements and being such that it has a ferrite matrix in the temperature range of 550–790° C., and in which range the steel in a ferritic state has been rolled to a total area reduction of at least 60%.

3,702,269
ULTRA HIGH STRENGTH DUCTILE IRON

Nathan Lewis Church, Warwick, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.
Continuation-in-part of abandoned application Ser. No. 878,938, Nov. 21, 1969. This application Jan. 22, 1971, Ser. No. 108,702
Int. Cl. C22c *37/00, 37/04*
U.S. Cl. 148—35 **4 Claims**

Directed to alloyed ductile irons having in the as-tempered condition a yield strength (0.2% offset) of at least about 150,000 p.s.i., and even at least about 170,000 p.s.i., which contain about 2.6% to about 4.0% carbon, about 1.5% to 4% silicon, about 6% to 11% nickel, up to about 7% cobalt, an effective amount of a graphite spheroidizing agent, up to about 1% manganese, up to about 0.4% molybdenum and the balance essentially iron.

3,702,270
METHOD OF MAKING A MAGNETIC POWDER

Meiro Kawasaki, Tokyo, and Shigetaka Higuchi, Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed June 21, 1971, Ser. No. 154,949
Claims priority, application Japan, June 23, 1970, 45/54,581
Int. Cl. H01f *1/22*
U.S. Cl. 148—105 **9 Claims**

A method of preparing powders having improved magnetic properties for use in the manufacture of recording tapes is shown. A colloidal suspension of iron oxide is formed. A solution of a salt of cobalt and/or nickel is added to the colloidal suspension and the mixture is agitated and the pH thereof controlled to facilitate absorption of the cobalt and/or nickel salts on the iron oxide. The iron oxide is then removed from suspension, washed, dried and ground and then dehydrated to uniformly diffuse the cobalt or nickel into the iron oxide. The mass is then reduced to form the metallic alloy. The powders formed according to the invention have substantially increased values of coercive force and magnetization and are particularly suited for use in master video tapes.

3,702,271
AZEOTROPIC REMOVAL OF WATER FROM ORDNANCE

Larry D. Henderson, Bryans Road, and Craig E. Johnson, Indian Head, Md., assignors to the United States of America as represented by the Secretary of the Navy
No Drawing. Filed Oct. 23, 1970, Ser. No. 83,660
Int. Cl. C06f *11/00*
U.S. Cl. 149—38 **6 Claims**

A process for removing water from explosives and propellants wherein the explosive or propellants are mixed with a liquid hydrocarbon, which exhibits an azeotrope with water, and the resultant azeotrope is volatilized from the remaining composition.

3,702,272
SPHERICAL ROCKET PROPELLANT CASTING GRANULES AND METHOD OF PREPARATION

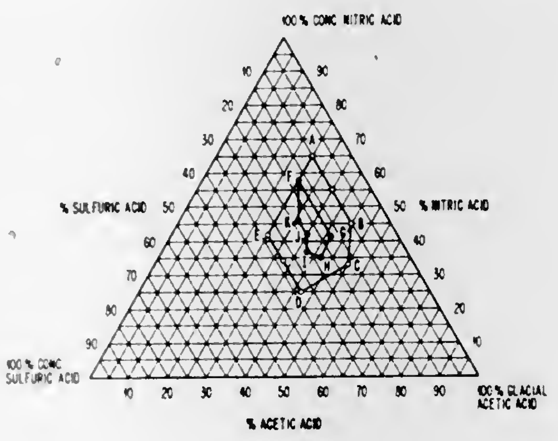
Thomas F. McDonnell, Collinsville, and Ralph E. Coffee, Alton, Ill., assignors to Olin Mathieson Chemical Corporation
No Drawing. Continuation-in-part of application Ser. No. 176,424, Feb. 28, 1962. This application Jan. 10, 1964, Ser. No. 337,099
Int. Cl. C06d *5/00*
U.S. Cl. 149—19 **36 Claims**

1. A process for preparing spherical rocket propellant casting granules which comprises admixing a lacquer of nitrocellulose in a volatile solvent therefor with an aqueous slurry of finely divided particles of a sensitive solid which is substantially insoluble in said volatile solvent, said sensitive solid being selected from the group consisting of a crystalline high explosive composition, a metal fuel for solid propellants, and mixtures thereof, agitating the resulting mixture to yield an aqueous suspension of spherical globules of the lacquer having said particles dispersed therein, evaporating a sufficient proportion of said volatile solvent to effect partial solidification of said globules, admixing a dewatering agent with the resulting aqueous suspension of partially solidified globules, evaporating the remainder of the solvent from the globules, whereby solid spherical granules of said particles firmly embedded in a matrix of nitrocellulose are formed from said partially solidified globules, washing said granules with water, and drying said granules.

18. A solid rocket propellant grain comprised of spherical propellant casting granules embedded in a cured thermosetting binder, said spherical propellant casting granules being comprised of finely divided particles of a crystalline high explosive compound firmly embedded in a matrix of nitrocellulose, said crystalline high explosive compound being substantially insoluble in a water immiscible solvent for nitrocellulose.

3,702,273
ETCHING COMPOSITIONS AND METHOD FOR ETCHING Cu AND Ni BASED METALS AT A UNIFORM RATE

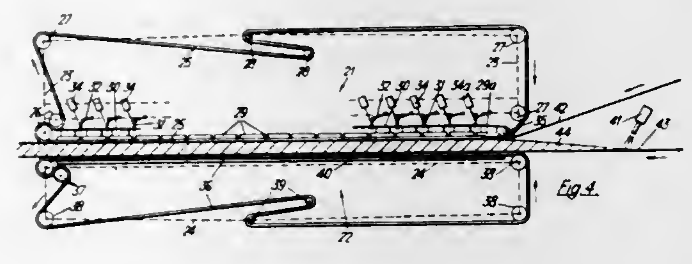
Harold Kenneth Johnston II, North Glenn, and Theodore Lowell Larson, Longmont, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 21, 1970, Ser. No. 100,106
Int. Cl. C23g *1/20*
U.S. Cl. 156—18 **10 Claims**



Composite structures of nickel based metals and copper based metals are utilized for example, in magnetic read/write transducers. The surfaces of such structures are normally finished by grinding. However, grinding sometimes tends to smear the different metals over one another, thus, interfering with their desired electrical and magnetic characteristics. In the present invention, smeared dissimilar metals are removed at a substantially uniform rate by etching with compositions including nitric acid, sulfuric acid, and acetic acid in relative percentages by volume lying within the area defined approximately in the accompanying diagram by the solid lines AB, BC, CD, DE, and EA.

3,702,274
PROCESS FOR MAKING RIGID POLYURETHANE FOAM LAMINATE

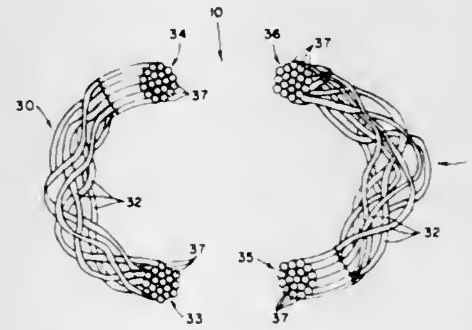
Alan Metcalf Wooler, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England
Continuation-in-part of abandoned application Ser. No. 421,392, Dec. 28, 1964. This application Aug. 4, 1969, Ser. No. 847,227
Int. Cl. B32b *5/18*
U.S. Cl. 156—79 **8 Claims**



Process for continuously manufacturing laminated articles having a plastics or resinous foam core sandwiched between and bonded to two outer sheets of facing material in which, after the foam-forming ingredients have been applied to the lower sheet and the two sheets are conveyed in parallel disposition with each other whilst the foam layer is formed between them, and subsequently to the occurrence of not less than 75% of the total expansion of the foam layer but before setting is complete, the components of the laminate are subjected to a predetermined yieldable pressure and conveying motion is imparted to the two sheets under the influence of that pressure. Also apparatus for performing such a process which comprises a foam dispensing means and means for conveying the upper and lower sheets of facing material, the conveying means being such as to exert a predetermined yieldable pressure on the foam at a stage when not less than 75% of the total expansion of its foam has occurred but before setting of the foam is complete.

3,702,275
FIBER OPTICS ENCODING-DECODING APPARATUS AND METHOD OF FABRICATING THE SAME

Richard Hooker III, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed June 3, 1970, Ser. No. 43,058
Int. Cl. B65h *81/00;* **G02b** *5/14*
U.S. Cl. 156—174 **5 Claims**



A matched pair of fiber optics image encoding-decoding bundles is fabricated by the steps of coiling a continuous optical fiber into a toroidal or similar shaped bundle of fiber convolutions; securing together a first section of each fiber convolution to form a first portion of the bundle, the remainder of each fiber convolution comprising a second section thereof; scrambling at least one second section of the fiber convolutions; securing together the second section of each fiber convolution so as to form a second portion of the bundle; and transversely cutting each fiber convolution at the first and second portions to effect two bundles with opposed end faces thereof defined by respective ones of the fiber endings. Although the opposite end faces of each bundle are arranged in different geometrical patterns of fiber endings, the corresponding end faces of the pair of bundles are arranged in substantially identical geometrical patterns of fiber endings.

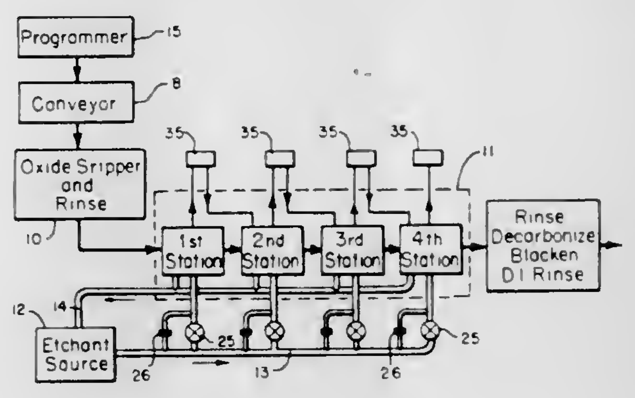
3,702,276
METHOD OF MAKING HIGH IMPACT STRENGTH GLASS FIBER-PLASTIC COMPOSITES

John E. Ward, Jr., Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation
No Drawing. Filed Jan. 13, 1969, Ser. No. 790,859
Int. Cl. B29h *9/04*
U.S. Cl. 156—181 **10 Claims**

A protective coating material applied to glass fibers prior to being drawn together into a strand and which when partially cured gives the strand a high degree of integrity. Organic resins reinforced by the strand have high impact strength. A preferred example of the coating material comprises a copolymer of vinyl acetate and normal methylol acrylamide.

3,702,277
CONTROL SYSTEM FOR MASK ETCHING APPARATUS

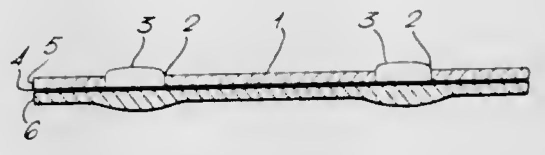
Martin L. Lerner, River Forest, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Sept. 23, 1970, Ser. No. 74,760
Int. Cl. C23f *17/00;* **C03c** *15/00;* **B23p** *15/00*
U.S. Cl. 156—345 **3 Claims**



A mask etching apparatus has a succession of etching stations to which etchant is supplied from a common source through a closed circulating distribution system. Measuring devices monitor the etching process by measuring the hole size of the mask in process and develop a control potential through which the duration of the etching time is controlled in the various stations. When no etching is to take place in a given station, a valve to that station is closed but a by-pass permitting a restricted flow of etchant continues circulation through the entire system.

3,702,278
NONSLIP FIBREGLASS SURFACE

Derek Lionel William Fitzgerald, South Hants Marine, Chandler's Ford, England
Filed Sept. 29, 1970, Ser. No. 76,579
Claims priority, application Great Britain, Sept. 29, 1969, 47,718/69
Int. Cl. B32b *3/10, 3/14, 3/30*
U.S. Cl. 161—5 **4 Claims**



A boat deck of glass-reinforced resin including a gelcoat thereon, grooves in the upper surface filled with strips of antislip material and a wood grain pattern visible through such gelcoat.

3,702,279
FIBROUS THERMAL INSULATION AND METHOD FOR PREPARING SAME

Zane L. Ardary, Kingston, Tenn., and David H. Sturgis, Muskegon, Mich., assignors to the United States of America as represented by the United States Atomic Energy Commission
No Drawing. Filed Apr. 7, 1971, Ser. No. 132,209
Int. Cl. B32b *17/02;* **C03b** *29/00*
U.S. Cl. 161—170 **9 Claims**

A low-density thermal insulation usable at high temperatures in oxidizing atmospheres is prepared by pulp molding a slurry of inorganic fibers, impregnating the molded fibrous mass with a binder of an inorganic sol, gelatinizing the sol, curing the gelatinized binder, drying the composite, and thereafter firing the composite for sintering the binder.

3,702,280
NYLON PANELS

Norman Stewart Anderson, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Jan. 5, 1971, Ser. No. 104,161
Claims priority, application Great Britain, Jan. 16, 1970, 2,245/70
Int. Cl. B32b *3/26*
U.S. Cl. 161—160 7 Claims

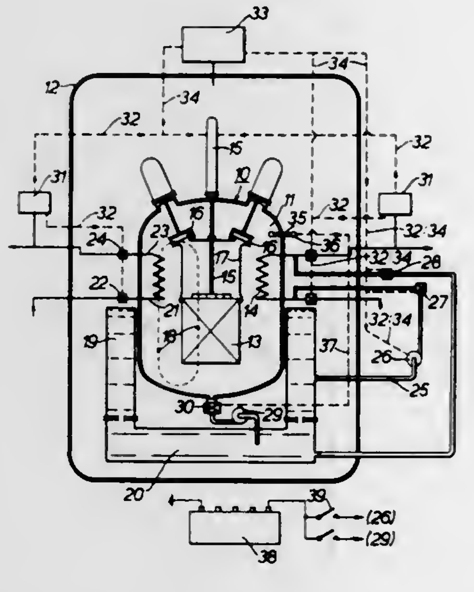
A panel comprising a nylon foam core formed integrally with a covering skin of nylon, the foam having an average pore size of less than 1.5 cm., skin thickness being 0.2 to 3 mm., overall thickness 2.5 to 25 mm., average density 0.2 to 0.9 g./cc. and the relationship of impact strength (S) to weight per unit area (W) being such that

$$\frac{\log_{10} S}{W} > 2$$

Manufacture of such panels by a two-shot moulding process using a mould of adjustable thickness.

3,702,281
REMOVAL OF HEAT FROM A NUCLEAR REACTOR UNDER EMERGENCY CONDITIONS

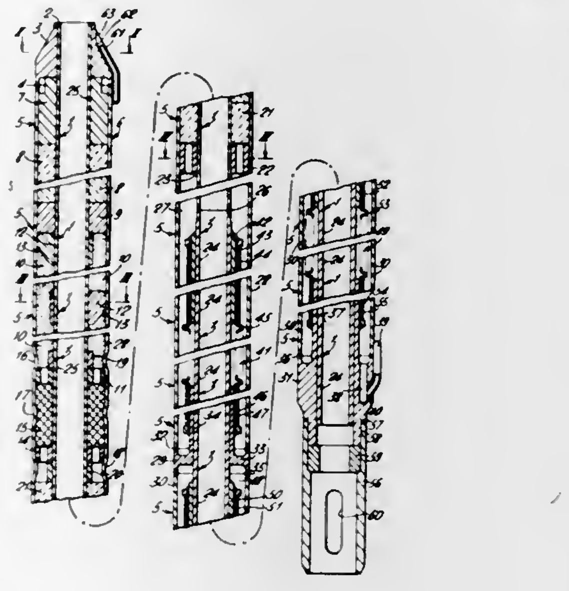
Leslie Birts, Knutsford, and Ronald Scott Challender, Warrington, England, assignors to United Kingdom Atomic Energy Authority, London, England
Filed Jan. 12, 1970, Ser. No. 2,194
Claims priority, application Great Britain, Jan. 16, 1969, 2,708/69
Int. Cl. G21d *3/04*
U.S. Cl. 176—37 3 Claims



A P.W.R. with a steam boiler in the same pressure vessel as the reactor core is provided with an emergency water supply which, on detection of a leak in the reactor coolant circuit, can first be connected as feed to the boiler to reduce reactor coolant pressure by abstracting heat and, when the coolant pressure has fallen adequately, can then be connected to the reactor coolant circuit to maintain the core flooded. The feed of the emergency water supply to the boiler and hence the pressure reduction can be carried out with low powered pumps operated from standby electrical supplies and, with the pressure reduced low powered pumps can again be used to maintain the core flooded. The emergency water supply can serve a dual function by being arranged also to act as a shield for the reactor.

3,702,282
NUCLEAR REACTOR FUEL ELEMENTS

John Andrew Gatley, Knutsford, and George Oliver Jackson, Timperley, Cheshire, England, assignors to United Kingdom Atomic Energy Authority, London, England
Filed Nov. 26, 1968, Ser. No. 779,066
Claims priority, application Great Britain, Dec. 20, 1967, 57,972/67
Int. Cl. G21c *3/18*
U.S. Cl. 176—68 5 Claims



A fuel pin for a fuel element of a nuclear reactor (for example of the sodium cooled fast breeder type) is of the elongate tubular type having its inner and outer sheaths sealingly secured together at one end and at the other end having first and second sealing means in spaced adjacent relationship to one another and each allowing relative longitudinal movement between the two sheaths. A duct provides a vent path to the outside of the fuel pin from the space between the two sheaths and bounded by the two sealing means. The duct is conveniently provided by a capillary tube helically coiled about the outside of the fuel pin and terminating at that end of the fuel pin which is remote from the two sealing means.

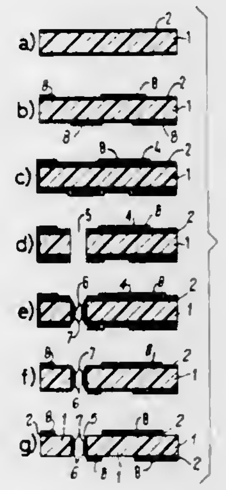
3,702,283
PROCESS FOR IMPROVING THE FOOD VALUE OF MICROORGANISMS OBTAINED BY CULTURE ON HYDROCARBON SUBSTRATES

Claude Gatellier, Boulogne, and Georges Gilkmans, Meudon la Foret, France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil Malmaison, France
No Drawing. Filed Aug. 24, 1970, Ser. No. 66,561
Claims priority, application France, Sept. 2, 1969, 6929980
Int. Cl. C12b *1/00*
U.S. Cl. 195—28 R 5 Claims

Microorganisms, for example yeasts, grown on hydrocarbon substrates have a high content of nucleic acids, which makes their use in food objectionable. This invention obviates this problem by providing a process according to which a microorganism previously grown on a hydrocarbon substrate is contacted with oxygen and a multiplication inhibitor specifically carbon dioxide, thereby stopping the multiplication while maintaining substantially unchanged the other life functions of the microorganism cells.

3,702,284
PROCESS OF PRODUCING PLATED THROUGH-HOLE PRINTED CIRCUIT BOARDS

Hans-Hermann Merkenschlager, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Oct. 16, 1969, Ser. No. 866,876
Claims priority, application Germany, Dec. 4, 1968, P 18 12 692.6
Int. Cl. B44d *1/18;* **C23b** *5/48*
U.S. Cl. 204—15 4 Claims



Plated through-hole printed circuit boards are produced by printing a first resist material (i.e. photoresist) onto appropriate metal-clad laminate board surfaces in a pattern predetermined by the desired circuits and then uniformly coating all of the board surfaces with a second resist material (i.e. a nitrocellulose lacquer) and producing desired through-holes between selected areas of the coated board surfaces. Thereafter a layer of a first metal (i.e. Cu) is applied onto the through-hole walls and on the coated surfaces by a metal-reduction process and such metal layer is then removed from only the coated surfaces and a layer of a second metal (i.e. Au) is electroplated onto metal-receptive hole walls and/or board surfaces. Then the second resist material is removed from the board surfaces and then portions of the metal-clad are removed from the board surfaces in a pattern predetermined by the desired circuits. The electroplating can occur before or after the removal of the second resist material; when occurring before, the second metal is electroplated only on the coated through-hole walls and when occurring after, the second metal is electroplated on the coated through-hole walls and on the metal-clad board surfaces free of resist material.

3,702,285
PROCESS FOR THE PRETREATMENT OF PLASTIC FOR THE PURPOSE OF ADHESIVE METALLIZATION

Helmut Knorre, Hainstadt, and Eugen Meyer-Simon, Frankfurt am Main, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany
No Drawing. Filed July 7, 1969, Ser. No. 839,678
Claims priority, application Germany, July 11, 1968, P 17 69 778.8
Int. Cl. B44d *1/092;* **C23b** *5/64*
U.S. Cl. 204—30 4 Claims

There is provided a process for the adhesive metallization of plastic surfaces including a chromosulfuric etch and subsequent chemical metallization and electroplating and improvement in which the plastic sample, after the chromosulfuric acid etching, is preferably treated in an aqueous alkaline intermediate bath containing ammonia or a material having, primary, secondary or tertiary amino groups and/or containing a quaternary ammonium compound.

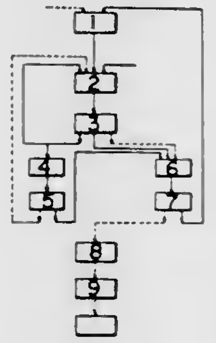
3,702,286
METHOD OF PLATING FOR VINYL CHLORIDE RESINS

Minoru Ichiki and Yutaka Ushimaru, Tokyo, Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan
No Drawing. Filed Sept. 8, 1970, Ser. No. 70,525
Claims priority, application Japan, Sept. 5, 1969, 44/70,341
Int. Cl. C23b *5/62*
U.S. Cl. 204—30 4 Claims

A method of plating a vinyl chloride resin comprising the steps of: pre-etching a vinyl chloride resin by means of a solution or an emulsion containing monohydric phenol; etching said resin by means of a highly concentrated mixture of sulfuric acid and chromic acid; subsequently effecting chemical plating of the thus etched resin; and thereafter effecting electro-plating of the chemically plated resin.

3,702,287
PROCESS FOR PRODUCING MANGANESE DIOXIDE FOR DRY CELLS

Hidehisa Yamagishi and Mizuo Tanaka, Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 21, 1970, Ser. No. 66,048
Claims priority, application Japan, Aug. 25, 1969, 44/66,556
Int. Cl. B01k *1/00;* **C01b** *15/04*
U.S. Cl. 204—83 6 Claims



Manganese dioxide is produced by direct current electrolysis of aqueous sulfuric acid solution of manganese sulfate under specified conditions. Mn^{3+} ions are produced and are hydrolyzed with the formation of MnO_2.

3,702,288
PROCESS FOR FINISHING METAL SUBSTRATES BY ELECTRODEPOSITING A PRIMER COMPOSITION AND APPLYING AN ACRYLIC ORGANOSOL COATING COMPOSITION

Anthony J. Erinjeri, Flint, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Mar. 31, 1971, Ser. No. 129,961
Int. Cl. B01k *5/02;* **C23b** *13/00*
U.S. Cl. 204—181 17 Claims

The process of this invention for finishing metal comprises the following steps:

(1) Electrodepositing a primer coating of a carboxylic polymer on a metal substrate, washing the coated substrate and baking the coated substrate;

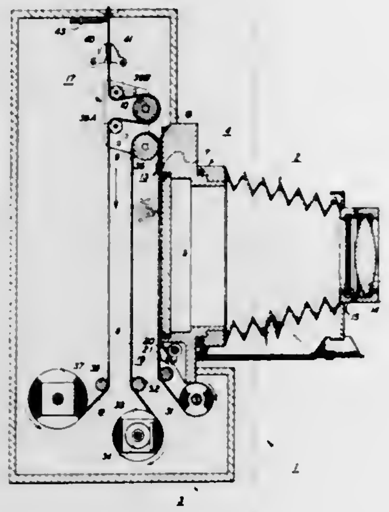
(2) Applying a sealer coat to the primed substrate and then a coating of an acrylic organosol lacquer and

baking the coating to form a smooth, glossy finish having a high quality lacquer appearance.

The process is particularly useful for finishing automobile bodies and truck bodies.

3,702,289
PHOTOELECTROPHORETIC PROCESS AND APPARATUS

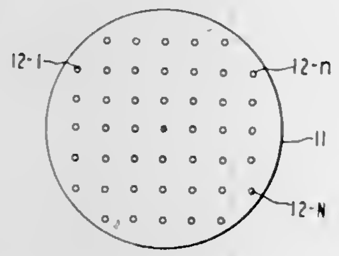
Raymond K. Egnaczak, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Oct. 28, 1970, Ser. No. 84,831
Int. Cl. B01k *5/02*
U.S. Cl. 204—181 **16 Claims**



A photoelectrophoretic device includes an imaging roller and transfer roller designed to travel over a film sheet having a rupturable ink pod. A blocking web is laid over the film sheet and picked up by the imaging roller during its travel. A receiver web is looped over a transfer roller and the loop is advanced across the imaged film sheet to pick up an image.

3,702,290
METHOD OF FORMING CONTACTS TO EPITAXIAL GaAs AND THE RESULTING STRUCTURE

Albert Y. C. Yu, Sunnyvale, Howard J. Gopen, Palo Alto, and Robert K. Waits, Sunnyvale, Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.
Filed Sept. 1, 1970, Ser. No. 68,693
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **9 Claims**



Ohmic contacts are formed to epitaxial gallium arsenide by sputtering the contact constituents onto the gallium arsenide surface. By controlling the constituents of the ohmic contact, the temperature at which the ohmic contact alloys with the underlying gallium arsenide is kept beneath the temperature at which the ohmic contact melts. This prevents the formation of islands of contact material on the gallium arsenide surface and thus ensures ohmic contacts with predictable characteristics.

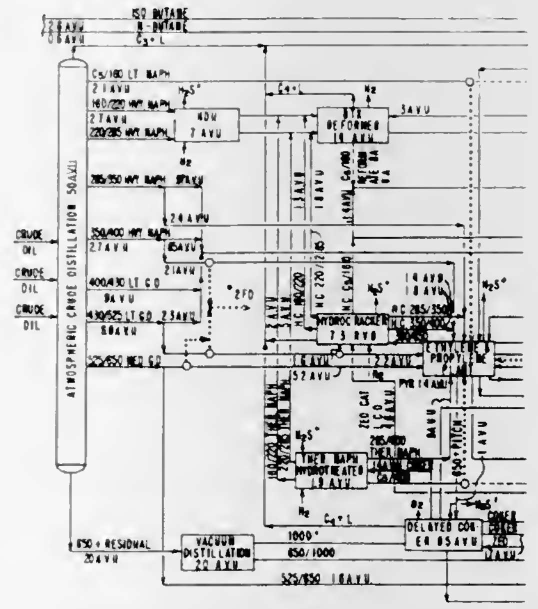
3,702,291
PROCESS FOR SELECTIVELY HYDROGENATING PETROLEUM CUTS OF THE GASOLINE RANGE IN SEVERAL STEPS

Yves Jacquin, Paris, and Michel Derrien, Rueil-Malmaison, France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil-Malmaison, France
No Drawing. Filed July 7, 1971, Ser. No. 160,505
Int. Cl. C10g *23/02*
U.S. Cl. 208—57 **12 Claims**

A feedstock of the gasoline range is selectively hydrogenated in three steps; a first step in liquid phase with a Group VIII metal catalyst, a second step in gaseous phase with a molybdenum or tungstn catalyst on a carrier of low surface and a third step with a molybdenum or tungsten catalyst on a carrier of high surface.

3,702,292
COMPOSITE HYDROCARBON REFINERY APPARATUS AND PROCESS ARRANGEMENT

William James Burich, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Mar. 10, 1970, Ser. No. 18,179
Int. Cl. C10g *37/06, 37/10*
U.S. Cl. 208—80 **24 Claims**



A highly integrated crude oil refinery arrangement for producing fuel and chemical products, involving crude oil distillation means, hydrocracking means, delayed coking means, reforming means, ethylene and propylene producing means comprising a pyrolysis steam cracking unit and a pyrolysis products separation unit, catalytic cracking means, aromatic product recovery means, butadiene recovery means and alkylation means in a highly flexible, closely controlled and inter-related system to produce a high conversion of crude oil to chemicals of as high as about 50% and a conversion of crude oil to gasoline and jet fuel as low as about 50% for a maximum value combination of widely varied products.

3,702,293
HYDROCARBON CONVERSION PROCESS WITH A BIMETALLIC CATALYST

John C. Hayes, Palatine, Roy T. Mitsche, Island Lake, Richard E. Rausch, Mundelein, and Frederick C. Wilhelm, Arlington Heights, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Original application May 4, 1970, Ser. No. 34,539. Divided and this application Dec. 30, 1971, Ser. No. 214,396
Int. Cl. C10g *35/08*
U.S. Cl. 208—139 **26 Claims**

Hydrocarbons are converted by contacting them, at hydrocarbon conversion conditions, with a catalytic composite, comprising a platinum group component and a Group IV–A metallic component combined with a carrier material containing alumina and finely divided, zeolitic crystalline aluminosilicate. A specific example of the hydrocarbon conversion processes disclosed herein is a process for producing LPG and a high octane reformate, which comprises contacting a hydrocarbon charge stock and hydrogen, at LPG production conditions, with a catalytic composite containing 0.01 to 2 wt. percent platinum, 0.1 to 3.5 wt. percent halogen and 0.01 to 5 wt. percent germanium combined with a gamma-alumina carrier material having 0.1 to 20 wt. percent of the hydrogen form of mordenite uniformly distributed therethrough.

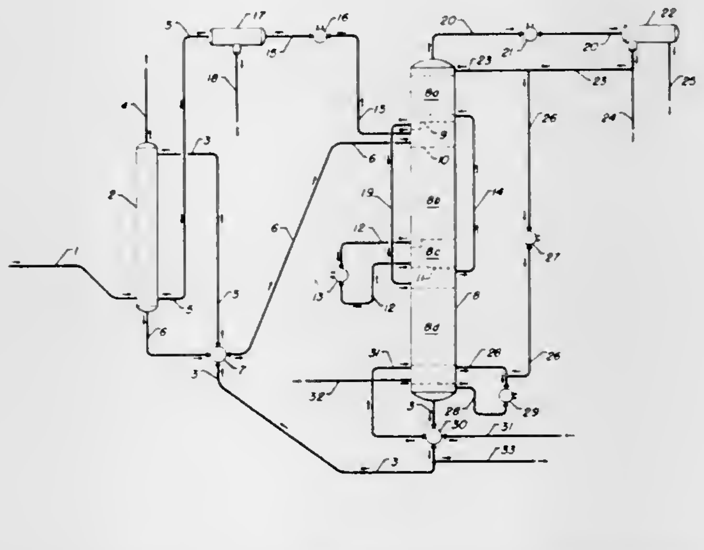
3,702,294
TRIMETALLIC HYDROCARBON CONVERSION CATALYST AND USES THEREOF

Richard E. Rausch, Mundelein, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Continuation-in-part of applications Ser. No. 807,910, Mar. 17, 1969, and Ser. No. 819,114, Apr. 24, 1969. This application May 10, 1971, Ser. No. 142,079
Int. Cl. C10g *35/08;* **B01j** *11/12*
U.S. Cl. 208—139 **23 Claims**

A catalytic composite comprising a combination of a platinum group component, a rhenium component, and a tin component with a porous carrier material is disclosed. The principal utility of this composite is in the conversion of hydrocarbons, particularly in the reforming of a gasoline fraction. A specific example of the disclosed catalytic composite is a combination of a platinum component, a rhenium component, a tin component, and a halogen component with an alumina carrier material in amounts sufficient to result in a composite containing, on an elemental basis, about 0.01 to 2 platinum, about 0.01 to 2 rhenium, about 0.01 to 5 wt. percent tin and about 0.1 to 3.5 wt. percent halogen.

3,702,295
AROMATIC HYDROCARBON RECOVERY METHOD

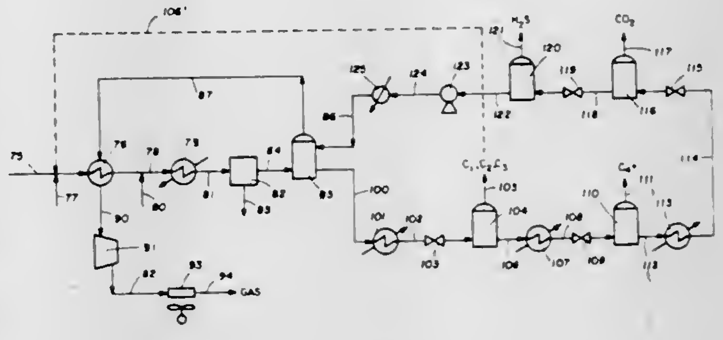
Herbert Lytle Thompson, Park Ridge, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed May 27, 1971, Ser. No. 147,574
Int. Cl. C10g *21/28;* **C07c** *7/10*
U.S. Cl. 208—321 **12 Claims**



High purity aromatic hydrocarbons are extracted from a mixture of aromatic and non-aromatic hydrocarbons by a combination of solvent extraction, stripping of the aromatic extract and the rectification of a vapor side cut from the aromatic stripping in the presence of a water reflux.

3,702,296
OIL AND GAS TREATMENT

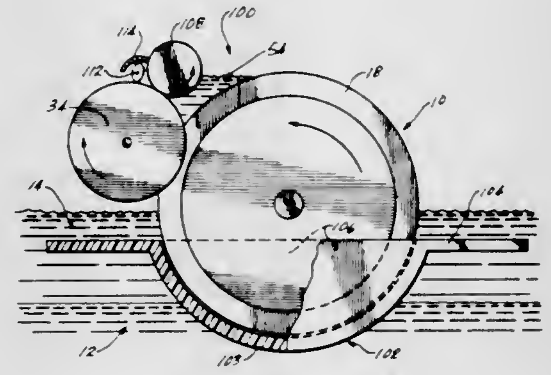
Thomas B. Arnold and Eugene B. Byrnes, Dallas, and Alonzo R. Castoe, Irving, Tex., assignors to Atlantic Richfield Company, New York, N.Y.
Filed Dec. 23, 1970, Ser. No. 100,905
Int. Cl. C10g *5/04*
U.S. Cl. 208—341 **8 Claims**



Methods for treating oil and gas to stabilize the oil by removing the gas and to make the gas meet specifications such as dew point. The oil is stabilized by subjecting same to flash conditions and the extent of flashing is controlled by adding to the oil a more volatilizable material of varying liquid and gas content. The gas is prepared to meet specifications by cooling followed by contacting with at least one solvent which has a greater affinity for heavier hydrocarbons, carbon dioxide, hydrogen sulfide, and water than for methane, ethane, and propane.

3,702,297
OIL SKIMMING DEVICE AND METHOD

John Maksim, Jr., 8165 Cornwall Ave., Etiwanda, Calif. 91739
Continuation-in-part of application Ser. No. 838,600, July 2, 1969. This application Feb. 16, 1970, Ser. No. 11,401
Int. Cl. B01d *15/00*
U.S. Cl. 210—40 **11 Claims**



A method and apparatus for removing crude oil from a body of water includes a sponge-coated collection roll. The ends of the collection roll are supported from floats so that the lower portion of the roll is immersed in the oil, and a drive mechanism rotates the collection roll to continuously absorb the oil. A downwardly sloping wringer is held tigthly against the lateral surface of the collection roll to deform the collection roll surface and squeeze the oil from the roll. A doctor blade or a roller disposed against the longitudinal surface of the wringer provides an inclined weir for the oil squeezed from the collection roll. The oil flows downwardly into a collection tank located adjacent to the collection roll. An elongated baffle plate below the collection roll limits the amount of water taken up by the collection roll. A worm gear removes grease accumulations trapped by the doctor blade or roller.

3,702,298
METHOD OF DISINFECTING WITH DIVALENT AND TRIVALENT METAL GERMICIDE

Frank J. Zsoldos, Jr., Denville, and Anna Kowalski, Rockaway, N.J., assignors to Eco Sciences, Inc., Montville, N.J.
No Drawing. Filed Sept. 10, 1970, Ser. No. 71,201
Int. Cl. C02b *3/08*
U.S. Cl. 210—62 **15 Claims**

This method of maintaining a highly oxidizing aqueous solution is intended primarily for treatment of swimming pool water. A metal having a multiple valence is interacted to a lower valence with oxidizable debris in the solution, and the metal is continuously re-oxidized to a higher valence by maintaining in the water a constant excess of an oxidizer bank consisting of a salt of a peroxy acid. Silver, copper and nickel are suitable metals and their salts have germicidal properties which are greatly increased and the spectrum broadened by converting the mono salt to a divalent or trivalent salt.

3,702,299
LUBRICATING COMPOSITION

Robert J. Hartle, Gibsonia, and Joseph J. McGrath, Monroeville, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed Nov. 13, 1970, Ser. No. 89,506
Int. Cl. C10m *1/20, 1/32*
U.S. Cl. 252—51.5 R **4 Claims**

A mineral lubricating oil, particularly a hydrogenated mineral lubricating oil is stabilized against photo-deterioration by incorporating therein a small amount sufficient to inhibit such deteroration of each of (1) an orthohydroxybenzophenone, e.g., 2,2'-dihydroxy - 4 - methoxybenzophenone and (2) an aliphatic primary amine, e.g., a C_8–C_{18} alkyl amine or mixture of C_8–C_{18} alkyl amines.

3,702,300
LUBRICANT CONTAINING NITROGEN-CONTAINING ESTER

Lester E. Coleman, Willoughby Hills, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio
No Drawing. Continuation of application Ser. No. 867,915, Oct. 20, 1969, which is a continuation-in-part of application Ser. No. 785,735, Dec. 20, 1968, both now abandoned. This application Mar. 17, 1971, Ser. No. 125,401
Int. Cl. C10m *1/32*
U.S. Cl. 252—51.5 A **10 Claims**

A carboxy-containing interpolymer in which some of the carboxy radicals are esterified and the remaining carboxy radicals are neutralized by reaction with a polyamino compound having one primary or secondary amino group is useful as an additive in lubricating compositions and fuels. The interpolymer is especially effective to impart desirable viscosity characteristics and anti-sludge properties to a lubricating oil.

3,702,301
RICE OIL-CONTAINING COMPOSITION FOR USE AS CUTTING, PENETRATING OR LUBRICATING OIL

Eual E. Baldwin, P.O. Box 69, Alice, Tex. 78332
No Drawing. Continuation-in-part of application Ser. No. 707,288, Feb. 21, 1968. This application Apr. 15, 1971, Ser. No. 134,482
Int. Cl. C10m *1/26, 1/50*
U.S. Cl. 252—56 S **8 Claims**

Rice oil derived from whole grain rice is employed according to the present invention as a cutting, penetrating or lubricating oil. Optionally, the whole grain rice oil of the present invention can be de-waxed and blended with other active ingredients such as white mineral oil, dibasic esters of sebacic acid and oleic acid of a low titer to give superior compositions suitable for use in the above manner as well as an additive for waxes, film forming coatings, low pour point greases and lubricating oils, and cosmetics.

3,702,302
TRUE SELF-HEATING COMPOSITION

Vernon Columbus Wilson, 611 High St., Apt. 12–D, Newark, N.J. 07102
No Drawing. Filed May 28, 1970, Ser. No. 41,625
Int. Cl. B01j *13/00;* **C09k** *3/00, 3/02*
U.S. Cl. 252—70 **2 Claims**

This invention relates to a true self-heating one-unit composition which will produce heat when applied. This unique self-heating unit does not require mixing with another element outside of its composition to generate heat.

This unique one-unit composition also antiquates many other multi-unit compositions or other compositions which require mixing with another element to produce a desired result by making them a single one-unit self-contained composition. In one embodiment, the one-unit, heat-producing composition consists essentially of two different water-in-oil emulsion gels having the same viscosity and being in contact with each other, the first water-in-oil emulsion gel having hydrogen peroxide in its water phase and the second water-in-oil emulsion gel having potassium sulfite in its water phase.

3,702,303
CLEANING OF PHOTOCONDUCTIVE INSULATING SURFACES

Carl F. Clemens and Thomas B. Baker, Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.
No Drawing. Filed Sept. 15, 1970, Ser. No. 72,547
Int. Cl. C09d *9/62;* **C11d** *7/50;* **C23g** *5/02*
U.S. Cl. 252—163 **10 Claims**

Composition for cleaning photoconductive insulating surfaces comprised of an aqueous-organic liquid emulsion, and a surfactant. The composition may further include an abrasive and suspending agent. The composition preferably includes a non-flammable organic liquid of low toxicity; e.g., tetrachloroethylene, which is emulsified in the water in an amount to control the volatility thereof and thereby provide a composition which evaporates from the surface to be cleaned at a rate that permits effective cleaning without producing solvent films or stains.

3,702,304
PAINT REMOVER COMPOSITIONS

Raymond G. Esposito, R.F.D. 2, Union, Maine 04862
No Drawing. Continuation-in-part of abandoned application Ser. No. 670,427, Sept. 25, 1967. This application June 16, 1971, Ser. No. 153,867
Int. Cl. C09d *9/04;* **C11d** *7/50;* **C23g** *5/02*
U.S. Cl. 251—171 **10 Claims**

Removal of paint from exterior surfaces such as the outside of a house is facilitated by the use of an inexpensive, slow drying paint remover composition comprising essentially an oil-in-water emulsion of xylol with either dimethyl formamide, dimethyl acetamide, dichloromethane, or mixtures thereof.

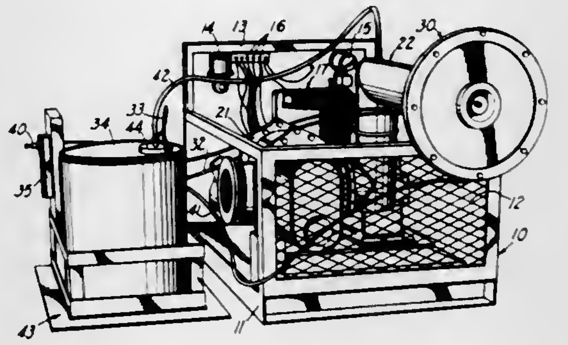
3,702,305
CHEMICAL OXYGEN GENERATOR

Tommy Lewis Thompson, Melbourne, Fla., assignor to Life Support, Inc., Melbourne, Fla.
No Drawing. Continuation-in-part of application Ser. No. 66,555, Aug. 24, 1970. This application Apr. 28, 1971, Ser. No. 138,299
Int. Cl. A62b *21/00;* **C01b** *13/02*
U.S. Cl. 252—187 **15 Claims**

A chemical oxygen generator formed of an alkali metal chlorate and one or more sodium or potassium oxides. The generator can be started by igniting an ignition cone or by the addition of water to a water initiatable cone associated therewith. Thereafter, catalytic decomposition by the sodium or potassium peroxide contained therein, or formed during reaction, causes generation of substantially pure oxygen with lesser heat evolution than the previous thermal decomposition type generators of the prior art.

3,702,306
FOGGING METHOD AND APPARATUS

David W. Waldron, Valdosta, Ga., assignor to Lowndes Engineering Co., Inc., Valdosta, Ga.
Original application Mar. 17, 1970, Ser. No. 20,364. Divided and this application Oct. 29, 1971, Ser. No. 193,840
Int. Cl. C09k *3/30*
U.S. Cl. 252—305 **7 Claims**



A fogging method and apparatus including a prime mover driving a blower for supplying air under pressure to a nozzle assembly. The nozzle assembly discharges the air therethrough along a plurality of circumferentially spaced spiral paths and along a centrally located axial path. Minute quantities of liquid such as concentrated pesticide are introduced into the axially directed discharging air and combined with the spirally directed discharging air to produce a fog.

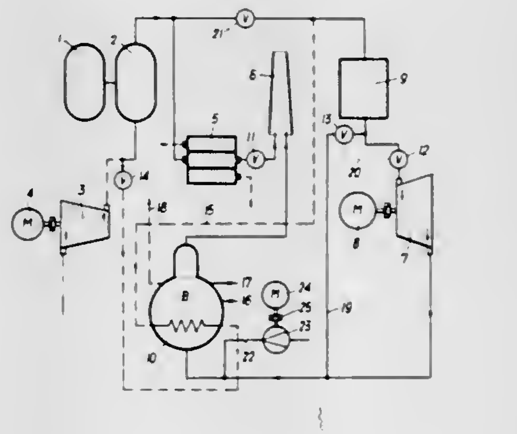
3,702,307
HYDRATED EMULSIFIERS FOR BAKERY PRODUCTS

Max E. Norris, Parma, Ohio, assignor to SCM Corporation, Cleveland, Ohio
No Drawing. Filed July 27, 1970, Ser. No. 58,717
Int. Cl. B01f *17/34*
U.S. Cl. 252—356 **7 Claims**

A hydrated emulsifier containing from about 20–30% water, 20–30% of an ethoxylated partial fatty acid ester of polyhydric alcohol, from 35–45% of a partial fatty acid ester of polyglycerol and from 9–16% of a partial fatty acid ester of propylene glycol is set forth. The emulsifier contains a relatively low amount of water but yet provides for the making of sponge cakes of high specific volume.

3,702,308
PROCESS FOR THE UTILIZATION OF THE ENERGY CONTENT OF THE FLUE GAS ACCRUED IN CATALYTIC CRACKING PLANTS

Erich Bauer, Eggendorf, and Franz Reichard and Ferdinand Schwarz, Vienna, Austria, assignors to Osterreichische Mineralolverwaltung Aktiengesellschaft, Vienna, Austria
Filed Aug. 18, 1970, Ser. No. 64,670
Int. Cl. B01j *11/68;* **C10g** *11/18*
U.S. Cl. 252—417 **4 Claims**



An improvement in a process for utilization of the energy content of the flue gas accrued in catalytic cracking plants and for the economic control of such cracking plants, to thereby improve the entire effectiveness of such a plant and its adaptability to various operating conditions. The process comprises the steps of supplying the combustion air required for the regeneration of the catalyst to the regenerator by a compressor, supplying the accrued flue gas to an exhaust gas turbine by a cyclone being independent of said regenerator, said exhaust gas turbine is arranged particularly to drive a generator, burning the combustible part of CO contained in the flue gas in a catalytic CO boiler following the turbine, supplying the surplus air resulting from a slighter requirement of combustion air for heating to said CO boiler by means of a line (bypass line) leading past the cracking process and branching off between said compressor and said regenerator and mixing said surplus air to the flue gas coming from the regenerator before said cyclone.

3,702,309
POLYMERIZATION OF ETHYLENE USING REDUCED GROUP IV–B, V–B AND VI–B METAL SALTS AS THE POLYMERIZATION CATALYST

Karl Ziegler, Kaiser Wilhelm Platz 1, Mulheim (Ruhr), Germany, and Heinz Breil, Mulheim (Ruhr), Germany; said Breil assignor to said Karl Ziegler, Mulheim (Ruhr), Germany
No Drawing. Original application Aug. 9, 1955, Ser. No. 527,412, now Patent No. 3,579,493, dated May 18, 1971. Divided and this application Mar. 1, 1971, Ser. No. 119,854
Claims priority, application Germany, Aug. 13, 1954, Z 4,371; Aug. 14, 1954, Z 4,374
Int. Cl. B01j *11/78*
U.S. Cl. 252—429 **8 Claims**

A catalyst suited for the polymerization of olefins comprising a reduction product of vanadium oxychloride, an acetylacetonate of a Group IV–B, V–B or VI–B metal, including thorium and uranium, and/or a halide of said metals containing only halogen and metal atoms. The reduction is effected in the absence of oxygen, moisture and active hydrogen containing compounds, using as reducing agent sodium hydride, lithium hydride and complexes of alkali metal hydrides with a boron compound of the formula BR′R″R‴, where R′, R″ and R‴ are hydrocarbon, alkoxy, aryloxy or hydrogen.

3,702,310

GASKET-FORMING COMPOSITIONS HAVING IMPROVED RESISTANCE TO WATER-BASED AEROSOL PRODUCTS

Charles W. Simons, Bedford, and Joel A. Gribens, Framingham, Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Jan. 29, 1969, Ser. No. 795,107

Int. Cl. G08d *13/28*

U.S. Cl. 252—430 **2 Claims**

Compositions suitable for use as sealing gaskets in aerosol mounting cups composed of a peptized curable neoprene polymer dissolved in a volatile organic solvent which includes a curing system consisting essentially of sodium acetate, magnesium oxide and the 1,3-di-o-tolylguanidine salt of dicatechol borate. The compositions may be modified by the inclusion of ingredients, such as fillers, plasticizers, antioxidants, and pigments to impart desirable properties.

3,702,311

HALODEHYDROGENATION CATALYST

William Q. Beard, Jr., Wichita, Kans., assignor to Ethyl Corporation, New York, N.Y.

Filed July 14, 1969, Ser. No. 841,238

The portion of the term of the patent subsequent to Jan. 26, 1988, has been disclaimed and dedicated to the Public

Int. Cl. B01j *11/78*

U.S. Cl. 252—441 **7 Claims**

A supported catalyst for the halodehydrogenation of ethane to ethylene which contains: (a) copper halide and/or iron halide; (b) an alkali metal halide; (c) a rare earth halide; and (d) one of the following compounds: manganese halide, zinc halide, calcium halide or titanium halide.

3,702,312

FLUORIDE-CONTAINING CRYSTALLINE ALUMINO-SILICATES

William B. Wilson, Pleasant Hill, Calif., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 714,328, Mar. 19, 1968. This application Oct. 5, 1970, Ser. No. 78,248

Int. Cl. B01j *11/78, 11/40*

U.S. Cl. 252—442 **11 Claims**

A novel crystalline alumino-silicate containing fluorine incorporated into the crystalline structure is prepared by treating a divalent alkaline earth metal form of the alumino-silicate sequentially with a sequestering agent followed by treatment with a solution of aluminum, fluoride and chloride ions. The fluoride-containing alumino-silicates are highly active and stable hydroconversion catalysts when composited with a hydrogenative metal component.

3,702,313

PROCESS FOR THE PRODUCTION OF POLYAMIDE FOAMS

Heinrich Gilch and Kurt Schneider, Krefeld-Bockum, and Hermann Schnell, Krefeld-Uerdingen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 11, 1968, Ser. No. 766,975

Claims priority, application Germany, Oct. 20, 1967, F 53,842

Int. Cl. C08j *1/18*

U.S. Cl. 260—2.5 N **5 Claims**

Improvement in the process for the production of polyamide foams by activated ionic polymerisation of lactams, in which organosiloxane-hydroxyalkylene block copolymers are added to the polymerisation mixture before polymerisation is started.

3,702,314

TRACING PRODUCT MIXTURE COMPRISING AN OLEFINIC POLYMER, AND ETHYLENE VINYL ACETATE COPOLYMER AND A HIGH BOILING SOLVENT

Raymond Farjon, Neuilly, Jacques Farce and Jacques Florent, Boulogne-sur-Mer, and Michel Dumoulin, Saint-Martin-les-Boulogne, France, assignors to Baignol & Farjon S.A., Boulogne-sur-Mer, Pas-de-Calais, France

No Drawing. Filed Dec. 7, 1970, Ser. No. 95,866

Claims priority, application France, June 10, 1969, 6919141

Int. Cl. C08f *29/12*

U.S. Cl. 260—23 H **8 Claims**

Mixtures based on thermoplastic materials for the manufacture of tracing products such as crayons and chalks, comprising olefinic polymers, 5–15% of ethylene-vinyl acetate copolymers and 5–15% of high boiling esters. The mixtures may also contain petroleum waxes, metal salts of fatty acids, epoxy resins, pigments, and fillers. The mixture may be injected-molded and may be enclosed in a molded sheath.

3,702,315

HEAT SENSITIVE LATICES

Donald P. Knechtges, Grafton, and George J. Antlfinger, Avon Lake, Ohio, assignors to the B. F. Goodrich Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 798,466, Feb. 11, 1969. This application Oct. 21, 1970, Ser. No. 82,790

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 MQ **10 Claims**

Synthetic latices are made heat-sensitive by the presence in the latex of a silicone polyether. The use of an organo-sulfonate in combination with a silicone polyether as a heat-sensitizing system for synthetic latices produces a heat-sensitive latex that is relatively stable at room temperature but that may be converted to a gel at a moderately low temperature. The silicone polyether when employed in combination with an organo-sulfonate compound may be used in significantly reduced amounts to impart heat-

sensitivity to the latex as compared to the amounts of silicone polyether required as the heat-sensitizing additive without the additive.

3,702,316

COLD BOX METHOD

Janis Robins, St. Paul, Minn., assignor to Ashland Oil Inc., Houston, Tex.

No Drawing. Continuation-in-part of application Ser. No. 72,113, Sept. 14, 1970, which is a continuation-in-part of application Ser. No. 723,873, Apr. 24, 1968, which in turn is a continuation-in-part of applications Ser. No. 569,106, Aug. 1, 1966, now Patent No. 3,429,848, and Ser. No. 536,180, Mar. 14, 1966, now Patent No. 3,485,797. This application Jan. 26, 1971, Ser. No. 109,946

Int. Cl. B22c *15/24*

U.S. Cl. 260—38 **6 Claims**

An improvement in cold box foundry core production methods in which a phenolic/isocyanate binder is cured with an organic base catalyst having a pK_b value ranging from about 7–11.

3,702,317

METHOD OF MAKING ARYLENE MODIFIED SILOXAZANES INCORPORATING CYCLODISILAZANE STRUCTURES

Laurence W. Breed, Overland Park, Kans., Richard L. Elliott, Kansas City, Mo., and Harold Rosenberg, Dayton, Ohio, assignors to the United States of America as represented by the Secretary of the Air Force

No Drawing. Filed Nov. 18, 1970, Ser. No. 90,836

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 P **17 Claims**

A polymer composition of arylene modified siloxazanes incorporating cyclodisilazane structures is prepared by the condensation of arylenedisilanols and cyclodisilazane derivatives. The reaction is preferably carried out in a suitable solvent at sufficiently high dilution to make possible the formation of high molecular weight polymers. Gelling of the product polymer is prevented by treating the initial solution of reactants, after partial polymerization has been achieved, with a silylating agent capable of converting residual silanol groups of the disilanol to siloxane groups. Further polymerization to achieve still higher molecular weights is then possible and the products are stable for relatively long periods of time without gelling. Finally, the product polymers which exhibit good elastomeric properties as well as thermal stability can be compounded into rubbers by cross-linking the product polymer through use of a peroxide catalyst and preferably with the addition of a suitable filler.

3,702,318

THERMALLY STABLE HETEROCYCLIC ANTHRAQUINONE POLYIMIDES AND METHOD FOR THEIR SYNTHESIS

Charles E. Browning, New Carlisle, Ohio, assignor to the United States of America as represented by the Secretary of the Air Force

No Drawing. Filed Aug. 11, 1971, Ser. No. 170,969

Int. Cl. C08g *20/32*

U.S. Cl. 260—47 CP **10 Claims**

Aromatic heterocyclic polyimides having a high thermal stability are provided by the condensation of 2,3,6,7-anthraquinonetetracarboxylic dianhydride with an aromatic diamine, such as 2,6-diaminoanthraquinone. The high thermal stability of the polymers renders them suitable for use in many aerospace applications where high temperatures are encountered. In particular, the polymers are useful for producing laminates, molded articles, films, fibers, and ablative materials.

3,702,319

METHOD FOR INTRODUCING BORIC ACID INTO LIQUID HYDROCARBONS DURING THEIR AIR OXIDATION TO THE CORRESPONDING ALCOHOLS

Horst Grasemann, Marl, Germany, assignor to Chemische Werke Huels, A.G., Marl, Germany

Filed Nov. 6, 1968, Ser. No. 773,717

Claims priority, application Germany, Nov. 10, 1967, P 16 43 825.8

Int. Cl. C07c *35/02*

U.S. Cl. 260—617 H **15 Claims**

A method for improving the air oxidation of hydrocarbons to their corresponding alcohols by adding dried boric acid to liquid hydrocarbon in an air oxidation reactor by delivering the boric acid from a collecting container to an intermediate container and from there through a pocket wheel to be carried by an inert gas through a dip tube immersed in the hydrocarbon.

3,702,320

METHOD FOR PREPARING URETHANES FROM CYCLIC NITRILE CARBONATES AND A HYDROXYL-CONTAINING COMPOUND

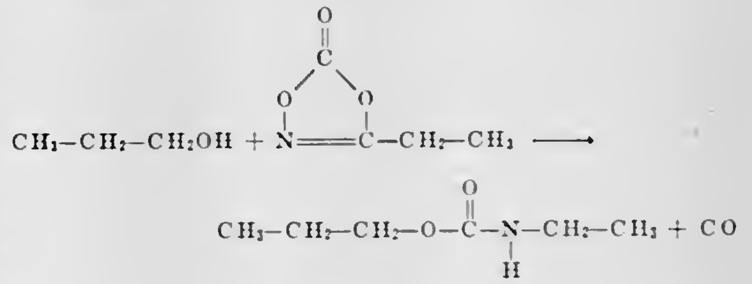
William H. Fritok, Glenolden, Pa., Larry G. Wolgemuth, Cherry Hill, N.J., and Robert C. Strand, New City, N.Y., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed May 12, 1970, Ser. No. 36,697

Int. Cl. C08g *22/04*

U.S. Cl. 260—77.5 B **28 Claims**

Urethanes are prepared by condensing-rearranging a hydroxyl group-containing compound with a cyclic nitrile carbonate in the presence of a catalytically-effective amount of dissolved tin, titanium, zinc, bismuth, aluminum or iron compound in which the metal is in a valence state other than zero. Using, for instance, propanol and ethane nitrile carbonate as illustrative reactants, the urethane-forming condensation-rearrangement reaction can be represented as follows:



3,702,321

PROCESS FOR PREPARING BENZODIAZEPINE DERIVATIVES

Hisao Yamamoto, Nishinomiya-shi, Shigeho Inaba, Takarazuka-shi, Tadashi Okamoto, Ashiya-shi, Toshiyuki Hirohashi, Kobe, Kikuo Ishizumi, Minoo-shi, Michihiro Yamamoto, Takarazuka-shi, Isamu Maruyama, Minoo-shi, Kazuo Mori, Kobe, Tsuyoshi Kobayashi, Minoo-shi, and Takahiro Izumi, Takarazuka-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Feb. 7, 1969, Ser. No. 797,708

Claims priority, application Japan, Apr. 2, 1968, 43/21,887; Apr. 4, 1968, 43/22,530; May 10, 1968, 43/31,466; May 17, 1968, 43/33,260; May 27, 1968, 43/36,249; June 13, 1968, 43/41,106

Int. Cl. C07d *51/72, 53/06, 57/02*

U.S. Cl. 260—239 BD **5 Claims**

A 2,3-dihydro-1H-1,4-benzodiazepine derivative, which is useful as tranquillizer, hypnotic, muscle-relaxant and anticonvulsant, is produced by hydrolyzing a 2-(dioxopiperazino)-benzophenone derivative. The 2-(dioxopiperazino)-benzophenone derivative is prepared by treating a 3-phenyl-indole-2-carboxylic acid ester derivative with a reactive ester of cyanomethylalcohol, and reducing the resulting 1-cyanomethyl compound, and then contacting the resulting piperazino-indole derivative with a suitable oxidizing agent.

3,702,322
DERIVATIVES OF LINCOMYCIN AND ITS ANALOGS AND PROCESS

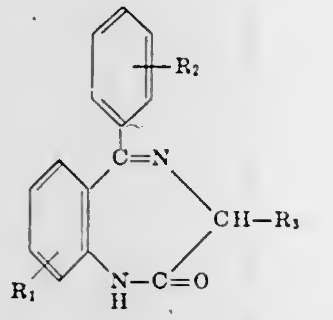
Brian Bannister, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Filed Apr. 6, 1970, Ser. No. 26,119
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 R **28 Claims**

Alkyl 7-deoxy-7(S)-OR-α-thiolincosaminides useful as intermediates for preparing antibacterially active 7-deoxy-7(S)-OR-lincomycins are prepared by opening the aziridine ring of alkyl N-acyl-6,7-aziridino-6-deamino-7-deoxy-α-thiolincosaminides by hydrolysis or alcoholysis.

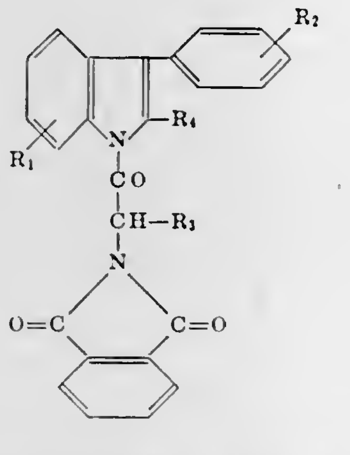
3,702,323
METHOD FOR PREPARING BENZODIAZEPINE DERIVATIVES

Hisao Yamamoto, Nishinomiya, Shigeho Inaba, Takarazuka, Tadashi Okamoto and Toshiyuki Hirohashi, Ashiya, Kikuo Ishizumi, Minoo, Michihiro Yamamoto, Toyonaka, Isamu Maruyama, Minoo, Kazuo Mori, Kobe, Tsuyoshi Kobayashi, Minoo, and Takahiro Izumi, Takarazuka, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan
No Drawing. Filed Apr. 7, 1970, Ser. No. 26,418
Claims priority, application Japan, Apr. 16, 1969, 44/29,904; May 29, 1969, 44/42,211
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 D **10 Claims**

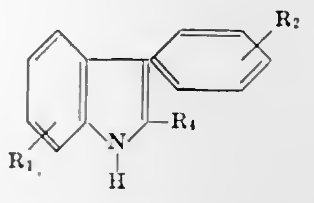
Novel and improved method for preparing benzodiazepine derivatives, which have prominent effects as tranquilizers, muscle relaxants, antispasmodics, anticonvulsants and hypnotics, represented by the formula,



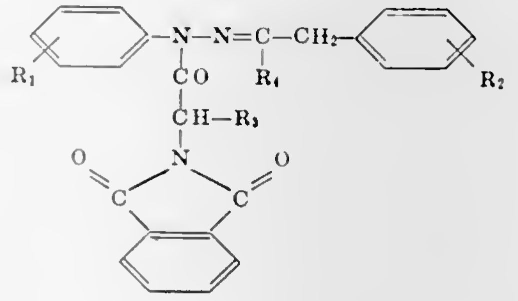
wherein R_1 is hydrogen, halogen, C_{1-4} alkyl, nitro or trifluoromethyl; R_2 is hydrogen or halogen; and R_3 is hydrogen or C_{1-4} alkyl. These benzodiazepine derivatives are prepared by reacting a novel 1-phthalimidoacyl-indole derivative represented by the formula,



wherein R_1, R_2 and R_3 are as defined above; and R_4 is hydrogen or C_{1-4} alkyl, with ozone and then contacting the reaction product with a hydrazine derivative. The 1-phthalimidoacyl-indole derivative is produced by phthalimidoacylation of an indole derivative represented by the formula,



or Fischer cyclization of a phthalimidoacyl-phenylhydrazone derivative represented by the formula,



wherein R_1, R_2, R_3 and R_4 are as defined above.

3,702,324
3,4,5-TRIMETHOXYBENZAMIDES OF SUBSTITUTED ANILINES AND OF ALKYLPIPERIDINES

Wilfred A. Skinner, Portola Valley, John G. Johansson, Palo Alto, and Howard L. Johnson, Sunnyvale, Calif., assignors to Stanford Research Institute, Menlo Park, Calif.
No Drawing. Filed June 24, 1970, Ser. No. 49,201
Int. Cl. C07d *29/30*
U.S. Cl. 260—293.53 **4 Claims**

3,4,5-trimethoxybenzamides of alkyl-substituted piperidines and aminopiperidines and of anilines substituted by such groups as alkyl, alkyloxy, thioalkyloxy, halo and nitro. These compounds are relatively non-toxic and are useful for pharmacological purposes. They exert a specific effect on the central nervous system and a somewhat lesser effect on muscle function, and thus have utility as tranquilizers.

3,702,325
INDOLE ALKALOID DERIVATIVES

Yves Louis-Marie Fellion, Gagny, France, assignor to Laboratoires Toraude, Paris, France
No Drawing. Filed Aug. 7, 1969, Ser. No. 848,357
Int. Cl. C07d *35/32*
U.S. Cl. 260—240 AL **6 Claims**

Certain 1-substituted derivatives of reserpine, including rescinnamines and methoserpidines, have useful pharmaceutical properties. They may be prepared by 1-cyanoethylation of the parent alkaloid followed by conversion of the 1-propionitrile substituent into other groups.

3,702,326
FUSED RING TETRAAMINO COMPOUND, THE TETRATOSYLATE THEREOF, AND THEIR SYNTHESIS

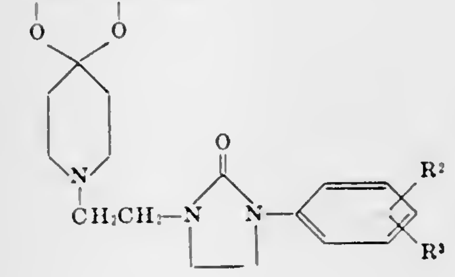
Fred E. Arnold, Dayton, Ohio, assignor to the United States of America as represented by the Secretary of the Air Force
No Drawing. Original application Apr. 16, 1969, Ser. No. 816,839, now Patent No. 3,546,181. Divided and this application Aug. 5, 1970, Ser. No. 61,398
Int. Cl. C07d *51/78*
U.S. Cl. 260—250 R **5 Claims**

This invention comprises new thermally stable polymeric compositions, starting compounds and intermediates and methods for preparing the same. The polymers are prepared by the condensation of an aromatic tetraacid, such as 1,4,5,8-naphthalene tetracarboxylic acid, and a tetraamino fused ring compound, namely 2,3,11,12-tetraamino-diquinoxal(2,3-e, 2′,3′-1)pyrene. This fused ring tetraamino compound is prepared by the reaction of 1,2-ditosylate of 1,2,4,5-tetraaminobenzene with 1,2,6,7-tetraketopyrene to give a tetratosylated derivative which after treatment with concentrated H_2SO_4 followed by base gives the desired fused ring tetramino compound. The tetratosylate and the tetraamino fused ring compound and the ditosylated tetraamino benzene intermediate are new compounds. The latter can be prepared by the reduction of 1,2-dinitro-4,5-(p-toluene sulfamido)benzene. With appropriate tetraacids or their derivatives and with sufficient reaction of the reagents, ladder polymers can be formed.

3,702,327
N-BETA-1-(3-PHENYLIMIDAZOLIDIN-2-ONE) ETHYL 4,4-ETHYLENE DIOXYPIPERIDINES

Jorge Pengman Li, Scotch Plains, N.J., and John Hans Biel, Lake Bluff, Ill., assignors to Aldrich Chemical Company, Inc., Milwaukee, Wis.
No Drawing. Filed Dec. 28, 1970, Ser. No. 102,171
Int. Cl. C07d *99/02*
U.S. Cl. 260—293.66 **18 Claims**

Compounds of the formula



wherein R^1 is a member selected from the group consisting of hydrogen, (lower) alkyl, phenyl and benzyl, and R^2 and R^3 each represent a member selected from the group consisting of chloro, bromo, iodo and trifluoromethyl; and the pharmaceutically acceptable nontoxic salts thereof exhibit tranquilizing activity and are useful as tranquilizers and antiemetic agents in mammals.

3,702,328
PROCESS FOR PREPARING THIAZOLE DERIVATIVES

Stephan P. Kukolja and Robert B. Morin, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
No Drawing. Filed May 16, 1969, Ser. No. 825,401
Int. Cl. C07d *17/10*
U.S. Cl. 260—302 H **2 Claims**

Process for preparing thiazolecarbonylamino-substituted butenoic acids and new thiazolecarbonylamino-substituted oxazolone compounds, e.g., 2-[N-(2′-phenoxymethyl-4-thiazolyl)carbonyl]amino - 3 - methylbutenoic acid, and 2-(2′-phenoxymethyl-4′-thiazolyl)-4-isopropylidene-5-oxazolone by treating a 2-(2-substituted-amido-1-thioacetyl-2-ethenyl)-4-isopropylidene - 5 - oxazolone with acid or base, in an inert organic solvent, or in admixture with the alcohol of the desired ester, which products of the process can be used as antibiotics and antifungal agents, as intermediates in the synthesis of penicillin and cephalosporin compounds and as anti-radiation chemicals.

3,702,329
PROCESS FOR THE SEPARATION OF OPTICALLY ACTIVE ISOMERS FROM TETRAMISOLE

Francois Dewilde, Saint-Marc-Massy, and Guy Gabriel Frot, Noisy-la-Sec, France, assignors to Rhone-Poulenc S.A., Paris, France
No Drawing. Filed June 1, 1970, Ser. No. 42,474
Claims priority, application France, June 2, 1969, 6918033
Int. Cl. C07d *99/10*
U.S. Cl. 260—306.7 **6 Claims**

Optical isomers are separated from a racemic base by reacting the base, or its salt with an optically inactive acid, in solution with 0.5 to 0.7 times the amount of an optically active acid theoretically required to convert completely the base into salts, and recovering the salt of the optically active acid with one optical isomer of the base by fractional crystallisation or fractional solution. The process is particularly applicable to the isolation of the l-dibenzoyl tartrate of the laevorotatory isomer of 6-phenyl-2,3,5,6-tetrahydroimidazo[2,1-b]thiazole, which is useful as an anthelmintic agent.

3,702,330
IMIDAZOLYL ACRYLIC ACID DERIVATIVES

Dale R. Hoff, Basking Ridge, N.J., and Clarence S. Rooney, Beaconsfield, Quebec, Canada, assignors to Merck & Co. Inc., Rahway, N.J.
No Drawing. Filed Oct. 5, 1970, Ser. No. 78,298
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 **5 Claims**

5-nitroimidazolyl-2-acrylic acid and derivatives thereof are discolsed as well as processes for their preparation from 5-nitroimidazolyl-2-carboxaldehyde and malonic acid. Said 5-nitroimidazolyl acrylic acid derivatives are active as antiprotozoal agents and compositions which are useful for the treatment of protozoal diseases containing said agents are also disclosed.

3,702,331
ANTIOZONANTS

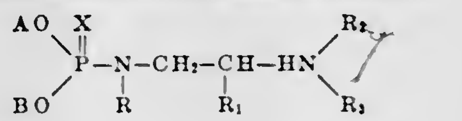
Elmer A. Tike, Nitro, W. Va., assignor to Security Chemicals, Inc., Nitro, W. Va.
No Drawing. Original application Sept. 27, 1968, Ser. No. 763,381, now Patent No. 3,580,885. Divided and this application July 7, 1970, Ser. No. 61,003
Int. Cl. C07d *27/26*
U.S. Cl. 260—326.9 **4 Claims**

The invention relates to novel N-substituted dimethyl pyrroles for use as antiozonants in rubber.

3,702,332
N-FURFURYL-MONOPHOSPHORYL ETHYLENE DIAMINES

Daniel Pillon and Jacques Ducret, Lyon, France, assignors to Pechiney-Progil, Lyon, France
No Drawing. Filed Feb. 11, 1970, Ser. No. 10,599
Claims priority, application France, Feb. 20, 1969, 6904575
Int. Cl. C07d *5/16*
U.S. Cl. 260—347.7 **7 Claims**

Agricultural pesticides of the general formula:



$$\begin{matrix} AO & X & & & & & R_2 \\ & \| & & & & & \\ & P & -\underset{\mid}{N}- & CH_2 & -\underset{\mid}{CH}- & HN & \\ BO & & R & & R_1 & & R_3 \end{matrix} \qquad (1)$$

wherein: A and B are identical or different lower alkyl radicals; X is oxygen or sulfur; R, R_1, and R_2 are hydrogen, or identical or different lower radicals; R_3 is either a lower alkyl radical, different from R_2, or an alkyl radical substituted by alkoxy, cyano, mono- or dialkylamino, or heterocyclic groups, or else, a cycloaliphatic or aryl radical. R_2 and R_3 may also form with the nitrogen atom a saturated, eventually substituted heterocycle, which may contain another heteroatom.

3,702,333

CYCLOPROPANECARBOXYLIC ACID ESTERS POSSESSING PESTICIDAL PROPERTIES

Michio Nakanishi and Toshihiko Mukai, Oita, Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

No Drawing. Filed Aug. 7, 1968, Ser. No. 750,776

Claims priority, application Japan, Aug. 11, 1967, 42/51,511; Mar. 5, 1968, 43/14,200

Int. Cl. C07d *5/20;* **A01n** *9/28*
U.S. Cl. 260—397.4 **3 Claims**

2 - methyl-5-(2-propynyl)-3-furylmethyl 2,2,3,3 - tetramethylcyclopropanecarboxylate and 2 - methyl-5-(2-propynyl)-3-furylmethyl chrysanthemate are useful pest control agents, e.g. against flies, mites, cockroaches, beetles, moths, etc.

3,702,334

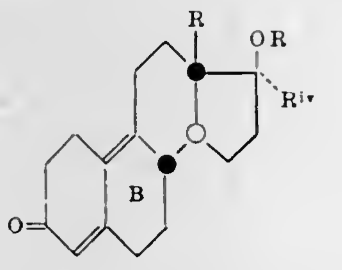
PROCESS FOR THE PREPARATION OF 17-SUBSTITUTED-Δ^4-GONENES AND INTERMEDIATES

Julien Warnant, 16 Place du Marche, 92 Neuilly-sur-Seine, France; Jean Jolly, Vallee des Anges C.D., 93 Clichy-sous-Bois, France; and Robert Joly, 8 Rue Chevalier, 95 Montmorency, France

No Drawing. Filed Aug. 12, 1970, Ser. No. 63,277

Int. Cl. C07c *167/02*
U.S. Cl. 260—397.4 **3 Claims**

A process for the production of a Δ^4-gonenic steroid having the formula



wherein R represents a member selected from the group consisting of hydrogen and the acyl of an organic carboxylic acid having from 1 to 18 carbon atoms, R′ represents an alkyl having from 1 to 4 carbon atoms, R^{iv} represents a member selected from the group consisting of lower alkyl, lower alkenyl or lower alkynyl, and B represents a member selected from the group consisting of two hydrogens in the 9α and 10β position and a double bond which comprises the steps of reacting a 3-ketal-4,5-seco-gonane-5-one with a ketalizing agent, oxidizing the resultant 3,5-diketal-4,5-seco-gonane-17β-ol, reacting the resultant 3,5-diketal-4,5-seco-gonane-17-one with an organometallic compound, hydrolyzing the resultant 3,5-diketal-17α-R^{iv}-4,5-secogonane-17β-ol, cyclizing the resultant 17α-R^{iv}-4,5-seco-gonane-17β-ol-3,5-dione and recovering said Δ^4-gonenic steroid. The novel intermediates are also part of the invention. The Δ^4-gonenic steroids are known compounds having steroidal properties.

3,702,335

THIOESTERS OF STEROIDS

Claude Lafille, Bretteville, sur Oron, France, assignor to Etablissements Clin-Byla, Paris, France

No Drawing. Filed Feb. 8, 1971, Ser. No. 113,768

Claims priority, application France, Feb. 11, 1970, 4,784

Int. Cl. C07c *169/32*
U.S. Cl. 260—397.45 **10 Claims**

Prednisolone and dexamethasone derivatives are provided, in which the 21-position carries a carboxyl group derived from a thionated amino acid, such as methionine or cysteine, in which the amino group is connected to a protective group such as the benzyloxycarbonyl group or the acetyl group and/or the sulphur atom is attached to a methyl radical or to a protective group, e.g. the benzyloxycarbonyl group or the benzyl group. The compounds have local anti-inflammatory action.

3,702,336

REACTION PRODUCTS OF KETONES WITH CARBONYL-pH_3 COMPLEXES OF CHROMIUM, MOLYBDENUM, AND TUNGSTEN

Ulrich Klabunde, West Chester, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 10, 1970, Ser. No. 97,009

Int. Cl. C07f *11/00;* **C23c** *11/00*
U.S. Cl. 260—429 R **17 Claims**

Chromium, molybdenum, or tungsten carbonyl phosphines are reacted with ketones to give carbonyl(hydroxyhydrocarbylphosphine)metal compounds. The products are useful for preparing adherent metallic coatings on a substrate by thermal decomposition.

3,702,337

PREPARATION OF ORGANOTHIOBORATES

Jean-Marc Lalancette, 2261 Bachand St., Sherbrooke, Quebec, Canada

No Drawing. Filed Mar. 2, 1970, Ser. No. 15,966

Int. Cl. C07f *5/04*
U.S. Cl. 260—462 R **4 Claims**

Organothioborates are prepared by reacting sulfurated sodium or potassium borohydride with from 50 to 100 percent excess of a mercaptan in petroleum ether or other low boiling diluent, such as hexane, heptane or benzene. The products of the reaction in addition to the organothioborate are insoluble alkali metal polysulfide and soluble disulfide. The insoluble polysulfide is filtered off. The organothioborate is then separated from the disulfide by distillation of the filtrate.

3,702,338

HYDROXY-METHYLATED DERIVATIVES OF RESIN ACIDS, THEIR USE IN ELASTOMERIC POLYURETHANES

John B. Lewis and Glen W. Hedrick, Lake City, Fla., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed May 12, 1970, Ser. No. 36,672

Int. Cl. C07c *69/74*
U.S. Cl. 260—468.5 **1 Claim**

The preparation of a new series of polyols derived from naval stores is described and their use in polyurethanes is demonstrated. Small amounts of these resin acid derivatives give added strength to polyurethane films prepared from propylene glycol polyethers and could very well be useful intermediates for industry. Increasing amounts of these new glycols blended with trimethylolpropane, 1,4-butanediol, and a polypropylene glycol and reacted with TDI gave clear strong films with tensile strengths around 5000 p.s.i. Further addition resulted in harder, more brittle films. Because of the brittle character of most of the films, use of the polymers probably would be limited to coating applications. On the other hand, change in the formulation in one instance resulted in films having fair low temperature and elastomeric properties. The diisocyanate requirements are reduced when the polyols are used as a component of the glycol system.

3,702,339

PROCESS FOR MANUFACTURING β-AMINOCARBOXYLIC ACID DERIVATIVES AND/OR THE CORRESPONDING α,β-UNSATURATED CARBOXYLIC ACID DERIVATIVES

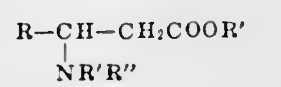
Herbert Eck and Joseph Heckmaier, Burghausen, Upper Bavaria, Helmut Prigge, Munich, and Hellmuth Spes, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Bavaria, Germany

No Drawing. Filed Oct. 1, 1968, Ser. No. 764,297

Claims priority, application Germany, Oct. 3, 1967, P 16 43 568.0

Int. Cl. C07c *101/12*
U.S. Cl. 260—482 R **6 Claims**

Process for manufacturing β-aminocarboxylic acid derivatives of the general structure

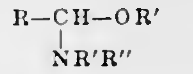


$$\mathrm{R{-}\underset{\underset{\displaystyle NR'R''}{|}}{CH}{-}CH_2COOR'}$$

and the corresponding α,β-unsaturated carboxylic acid derivatives of the general structure

$$\mathrm{R{-}CH{=}CH{-}CO{-}OR'}$$

which comprises reacting compounds of the general formula



$$\mathrm{R{-}\underset{\underset{\displaystyle NR'R''}{|}}{CH}{-}OR'}$$

with ketene, where, in the above formulas

R=H, phenyl residues,
R′, R″=alkyl residue with 1–4 C-atoms.

3,702,340

OXIDATION PROCESS EMPLOYING NITROGEN OXIDE CATALYSIS FOR THE PREPARATION OF HUMATES FROM COAL

Clifford E. Selin, Salt Lake City, Lloyd B. Lyon, Midvale, Stanford T. Holbrook, Salt Lake City, and Francis H. Hammond, Bountiful, Utah, assignors to American Hydrocarbon Company, Salt Lake City, Utah

Filed Oct. 8, 1968, Ser. No. 767,924

(Filed under Rule 47(a) and 35 U.S.C. 116)

Int. Cl. C07c *63/00*
U.S. Cl. 260—515 H **14 Claims**

An oxidation process employing nitrogen oxide catalysis for the preparation of humates and other organic chemicals from coal. The process comprises the steps of introducing oxygen and a catalytic amount of a nitrogen oxide into a reactor containing a pulverized coal, to which 5% to 50% moisture has been admixed, maintaining the reactor at a temperature below the boiling point of water, terminating the reaction within at least ten hours and recovering humates and other organic chemicals.

3,702,341

METHOD OF RECOVERING LYSINE FROM A FERMENTATION BROTH

Moriyoshi Ishida and Terutsugu Hori, Kawasaki, Kanagawa-ken, Yuzuru Otsuka, Tokyo, Kunimitsu Sato, Kawasaki, Katsuyuki Inoue, Yokohama, and Yoshio Ogata, Kawasaki, Kanagawa-ken, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Filed Jan. 19, 1970, Ser. No. 4,109

Claims priority, application Japan, Feb. 3, 1969, 44/7,990

Int. Cl. C07c *99/02*
U.S. Cl. 260—527 N **5 Claims**

Lysine can be recovered from fermentation broths containing the same by adjusting the pH to 3–7 with hydrogen chloride and making the broth supersaturated with lysine monohydrochloride dihydrate, if the original broth meets the requirements that the weight ratio X of lysine to total solids is at least 0.32, and that the mol ratio Y of added hydrogen chloride to lysine in the adjusted broth satisfies the condition that XY is at least 0.32. The recovered lysine monohydrochloride dihydrate is practically pure and may be further purified or converted to other forms of lysine.

3,702,342

FUMARIC ACID CRYSTALLIZATION PROCESS

Gene M. Kibler, Terre Haute, Ind., and Clifton L. Singleton, Brown Deer, Wis., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Filed July 2, 1971, Ser. No. 159,484

Int. Cl. C07c *51/42*
U.S. Cl. 260—537 N **2 Claims**

In a process for preparation of fumaric acid crystals by the catalytic isomerization of maleic acid solution, slow agitation during isomerization and then simultaneously slow cooling at a rate of about 0.25–6.2° C. per minute after isomerization is substantially complete, results in fumaric acid crystals having a relatively low content of fine materials.

3,702,343

2-METHYL-2-(TERTIARY ALKYL CYCLOHEXYL) PENTAN-4-ONES AND PROCESSES

Muus G. J. Beets and Harm van Essen, Hilversum, Netherlands, assignors to International Flavors & Fragrances Inc., New York, N.Y.

No Drawing. Filed Aug. 11, 1969, Ser. No. 849,192

Int. Cl. C07c *46/29*
U.S. Cl. 260—586 B **1 Claim**

Novel products produced by the process of reducing by means of hydrogenation a 2-methyl-2-(4′-t-alkylphenyl)-pentan-4-one and then oxidizing the resulting product so produced.

3,702,344

NOVEL FORMAMIDE DERIVATIVES

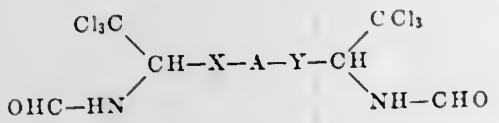
Walter Ost, Klaus Thomas, and Dietrich Jerchel, Ingelheim am Rhein, Germany, assignors to C. H. Boehringer Sohn, Ingelheim am Rhein, Germany

No Drawing. Filed July 15, 1970, Ser. No. 55,270

Int. Cl. C07c *103/00*

U.S. Cl. 260—561 S **21 Claims**

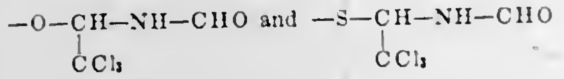
Compound of the formula



$$\mathrm{Cl_3C(OHC{-}HN)CH{-}X{-}A{-}Y{-}CH(CCl_3)NH{-}CHO}$$

wherein X and Y are each oxygen, sulfur, —SO— or —SO_2—; and A is

(a) straight or branched alkylene of 2 to 10 carbon atoms, whose carbon chain may be interrupted by 1 to 3 oxygen atoms, by a sulfur atom, by an —SO— group, by an —SO_2— group, by a cyclohexylene group or by a phenylene group, where said phenylene group may have substituents attached thereto, said substituents being selected from the group consisting of 1 to 2 chlorine or bromine atoms,



$$\mathrm{{-}O{-}\underset{CCl_3}{CH}{-}NH{-}CHO \text{ and } {-}S{-}\underset{CCl_3}{CH}{-}NH{-}CHO}$$

(b) cyclohexylene; or

(c) phenylene, which may have 1 to 4 halogen, 1 to 2 lower alkyl or 1 to 2 lower alkoxy substituents attached thereto;

the compounds are useful as biocidal agents, especially as systemic fungicidal agents against all types of phytopathogenic fungi, such as mildew, plant rust and Fusaria.

3,702,345

PROCESS FOR CONVERTING ETHYLENE TO NORMAL ALPHA OLEFINS

Herbert B. Fernald and William Gall, Glenshaw, Russell G. Hay, Gibsonia, and Alfred N. Kresge, Verona, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Oct. 6, 1970, Ser. No. 78,557

Int. Cl. C07c *3/10*

U.S. Cl. 260—683.15 D **9 Claims**

In a process wherein ethylene is treated with an aluminum hydrocarbon to obtain a product predominating in normal alpha olefins, the improvement which involves heating said product at an increased temperature level for a short period of time prior to recovery of the normal alpha olefins.

3,702,346

CONVERSION OF ETHYLBENZENE TO STYRENE

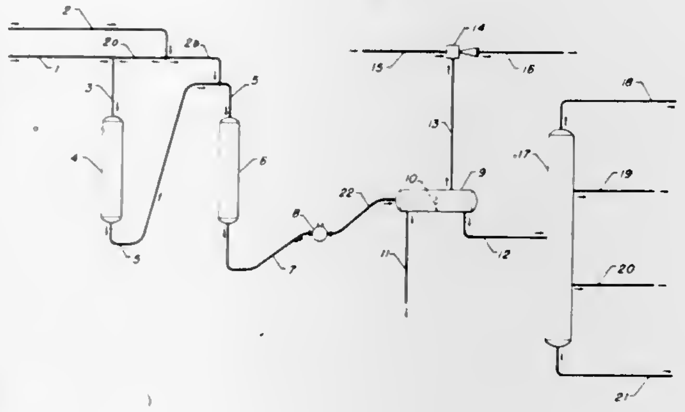
James S. Kellar, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed June 30, 1971, Ser. No. 158,303

Int. Cl. C07c *15/10*

U.S. Cl. 260—669 R **5 Claims**

In a process for the steam dehydrogenation of ethylbenzene to styrene, the selectivity of the dehydrogenation reaction is improved by maintaining the reactor products settler, wherein condensed reactor products are separated, at a pressure less than atmospheric.



3,702,347

PARA-XYLENE RECOVERY AND PRODUCTION

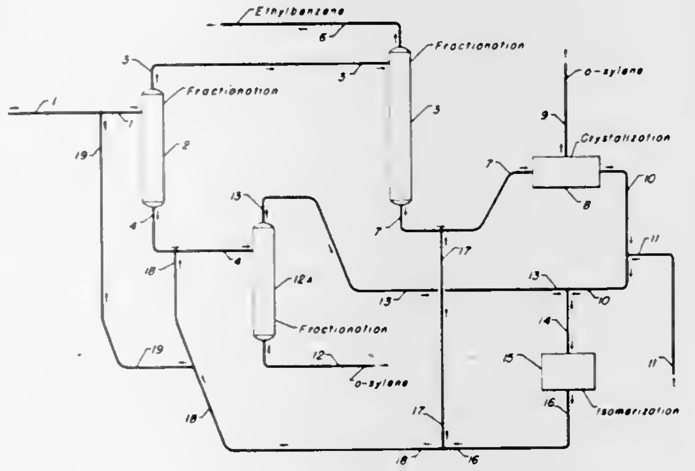
George F. Adams, Tulsa, Okla., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 9, 1970, Ser. No. 87,691

Int. Cl. C07c *7/12*

U.S. Cl. 260—674 A **12 Claims**

A process for the recovery of para-xylene from a C_8 aromatic mixture wherein the mixture is separated by fractional distillation to produce a relatively ortho-xylene-free, ethylbenzene, para-xylene and meta-xylene fraction and a relatively ethylbenzene-free ortho-xylene, meta-xylene and para-xylene fraction wherein the meta-xylene and para-xylene are present in a meta-xylene to para-xylene ratio of about 4:1 to about 7:1. The ethylbenzene fraction is separated by fractional distillation to produce a relatively pure ethyl-benzene overhead stream and a mixed meta-xylene-para-xylene bottoms stream. This meta-xylene-para-xylene containing bottoms stream is then separated by fractional crystallization to produce a relatively pure para-xylene product stream and a residual para-xylene-meta-xylene stream of approximately eutectic composition. Preferably, the residual para-xylene-meta-xylene stream and the mixed meta-xylene and para-xylene stream produced in the first fractionation are isomerized to produce additional quantities of para-xylene.



3,702,348

PROCESS FOR THE PREPARATION OF SATURATED MONOCYCLIC MONOTERPENES

Rudolf Nehring and Gunter Hockele, Marl, and Gerhard Ludwig, Lippramsdorf, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

No Drawing. Filed Oct. 19, 1970, Ser. No. 82,209

Claims priority, application Germany, Oct. 20, 1969, P 19 52 725.4

Int. Cl. C07c *13/16*

U.S. Cl. 260—675.5 **12 Claims**

An improved process for the hydrogenation of eucalyptol and/or 1,4-cineol and mixtures of unsaturated monocyclic monoterpenes comprising reducing them, preferably continuously with a hydrogenation catalyst which prior to reduction consists essentially of

nickel, 10–60% by weight;
calcined aluminum oxide, 10–87.3% by weight;
zinc oxide, 0–40% by weight; and
silicon dioxide, 0–5% by weight.

3,702,349

LOW TEMPERATURE CURING PROCESS AND COATING COMPOSITIONS SUITABLE THEREFOR

Thomas R. Merlino, North Providence, R.I., and John H. Flickinger, Houston, and Russell T. McFadden, Freeport, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Apr. 29, 1970, Ser. No. 33,036

Int. Cl. C08g *45/04*

U.S. Cl. 260—830 R **27 Claims**

Coatings may be cured by this process below 50° F. and at temperatures as low as —10° F. Suitable coating compositions comprise a solution in an inert organic solvent of (1) a polyaziridinyl adduct having more than one aziridinyl hydroxyalkyl group per molecule and (2) a coreactant which may be a dicarboxylic acid anhydride or a polyfunctional material having more than one anhydride, oxirane, thiol, sulfonic acid or carboxylic group per molecule.

3,702,350

POLYESTER FIBERS WITH ALIPHATIC SULPHONIC ACID CONTAINING ANTISTATIC AGENTS

Isao Kimura and Fumimaro Ogata, Osaka, and Koichiro Ohtomo, Settu, Osaka-fu, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 30,212, Apr. 20, 1970. This application July 12, 1971, Ser. No. 161,883

Claims priority, application Japan, Apr. 22, 1969, 44/31,415

Int. Cl. C08g *45/14*

U.S. Cl. 260—835 **10 Claims**

A fiber having durable antistatic and hydrophilic properties to withstand repeated launderings, which comprises a polymer composition consisting of 99.95–60% by weight of a synthetic linear polyester or polyesterether and 0.05–40% by weight of at least one sulphonic acid containing compound which is prepared by sulphonating an epichlorohydrin homopolymer or an alkyleneoxide/epichlorohydrin block copolymer. The sulphonic acid containing compound may contain also an active chlorine atom, unsaturated methylene group or epoxy group.

3,702,351

CATIONIC THERMOSETTING RESINS CONTAINING THE REACTION PRODUCT OF A CARBOXYL TERMINATED POLYESTER WITH AN EPOXY AMINE ADDUCT TREATED WITH EPICHLOROHYDRIN

Gerard Tesson, Auzouer-en-Touraine, France, assignor to Manufacture de Produits Chimiques Protex, Levallois, Hauts-de-Seine, France

No Drawing. Filed June 9, 1970, Ser. No. 44,906

Int. Cl. C08g *45/14*

U.S. Cl. 260—835 **7 Claims**

A water-soluble cationic thermosetting resin is produced by reacting a polyester resin having terminal carboxyl groups with an epoxy-amine addition compound and condensing the product with epichlorhydrin. The wet strength of paper is improved by impregnating same with a solution of the resin and drying the paper.

3,702,352

CRYSTALLINE BLOCK COPOLYMERS OF ALIPHATIC ALPHA-OLEFINS AND PROCESS OF PREPARING SAME

Irving Leibson, Wyckoff, N.J., assignor to Dart Industries Inc., Los Angeles, Calif.

No Drawing. Continuation of abandoned application Ser. No. 610,502, Jan. 20, 1967. This application Nov. 16, 1970, Ser. No. 90,124

Int. Cl. C08f *15/04*

U.S. Cl 260—878 B **9 Claims**

Novel compositions of block copolymers of alpha-olefins and processes therefor which compositions have improved contact clarity when molded over compositions of the prior art processes. The compositions comprise

(a) 80% to 95% by weight of a pre-segment consisting essentially of a random copolymer of (1) 90–98.5 mole percent of an alpha-olefin having 2 to 9 carbon atoms and (2) 1.5–10 mole percent of an alpha-olefin having 2 to 9 carbon atoms different from (1),

(b) 5% to 20% by weight of a post-segment consisting essentially of a homopolymer of an alpha-olefin having 2 to 9 carbon atoms which is the same as (a) (1).

3,702,353

CONTINUOUS PROCESS FOR MANUFACTURING SMALL PARTICLE NITROCELLULOSE

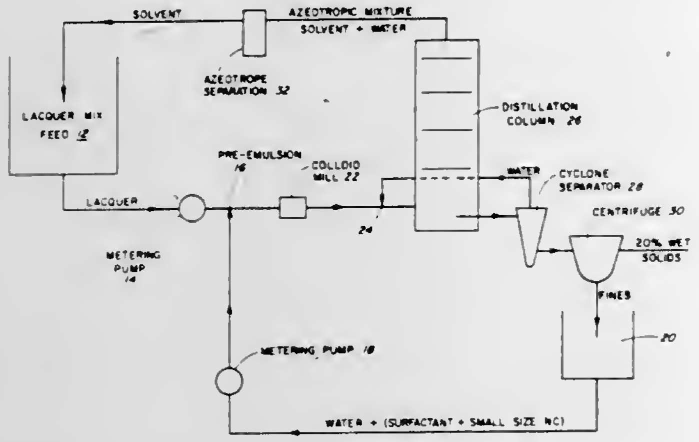
Larry D. Henderson, Bryans Road, and Robert C. Wilson, Indian Head, Md., assignors to the United States of America as represented by the Secretary of the Navy

Filed Sept. 24, 1970, Ser. No. 75,054

Int. Cl. C06b *21/02*

U.S. Cl. 264—3 D **5 Claims**

A continuous process for manufacturing small particle nitrocellulose, such as plastisol nitrocellulose, wherein the nitrocellulose lacquer is pre-emulsified by contact with a stream of water in a pipe T, completely emulsified in a colloid mill, partially drowned by contact with a second



stream of water and completely drowned by passing directly into a distillation column.

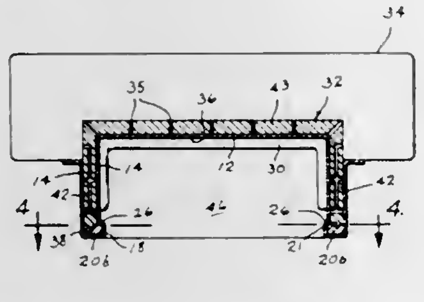
3,702,354
METHOD FOR PREPARING POLYBUTADIENE ACRYLONITRILE PROPELLANT AND EXPLOSIVE MATERIALS AND PRODUCTS THEREOF

James P. Diebold and Judson B. Eldridge, China Lake, Calif., assignors to the United States of America as represented by the Secretary of the Navy
No Drawing. Filed Feb. 20, 1970, Ser. No. 18,030
Int. Cl. C06d *5/06*
U.S. Cl. 264—3 D **8 Claims**

A process for the rapid production of filled polybutadiene acrylonitrile formulations which form well consolidated shapes having uniform strength which, briefly, comprises preparing a gel by mixing the polybutadiene acrylonitrile rubber in a suitable solvent, adding a rubber crosslinker, plasticizer or vulcanizing agent; stirring in a filler such as salts, metals, carbon black, etc., extracting the solvent; pouring the product into drying trays; and drying at room temperature. The product is ready to be extruded or block-pressed into various predetermined shapes.

3,702,355
METHOD OF FORMING A MOLDED ARTICLE OF MANUFACTURE WITH STRENGTHENING MEMBERS FORMED THEREIN

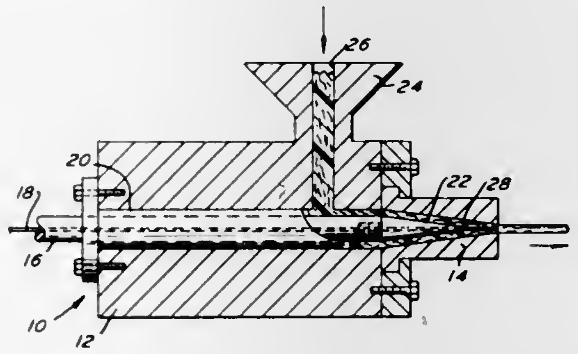
William G. Hayden, Elkhart, Ind., assignor to Chemcraft Incorporated, Elkhart, Ind.
Filed Sept. 16, 1970, Ser. No. 72,689
Int. Cl. B29c *17/04, 3/02*
U.S. Cl. 264—92 **3 Claims**



An article of manufacture formed of molded sheet material which carries a plurality of article strengthening members. The strengthening members constitute a removable part of the mold during forming of the article and are retained by the formed sheet material upon separation of the material from the permanent part of the mold. The article strengthening members are not interconnected and are adapted for movement relative to each other after the formed sheet material has been separated from the mold.

3,702,356
PROCESS FOR PRODUCTION OF GLASS-FILLED THERMOPLASTIC PELLETS SUITABLE FOR BLENDING WITH THERMOPLASTIC

Norman T. Hall, Santa Ana, Calif., assignor to Liquid Nitrogen Processing Corporation, Malvern, Pa.
Continuation-in-part of application Ser. No. 833,983, June 17, 1969. This application Mar. 27, 1970, Ser. No. 23,213
The portion of the term of the patent subsequent to Sept. 21, 1988, has been disclaimed
Int. Cl. B29c *17/14*
U.S. Cl. 264—141 **3 Claims**



The process consists of feeding an extruded mixture of silane coupling agent, and molten thermoplastic (with or without glass fibers) to a cross-head die, coating continuous glass roving with said mixture in said cross-head die, solidifying said molten thermoplastic while said thermoplastic is coated on said roving, and pelletizing the solidified material. Such pellets may be blended with thermoplastic, and thereafter molded to yield an article having high tensile strength.

3,702,357
UNIFORMITY OF POLYESTER FILMS

Edward W. Smith, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Continuation of abandoned application Ser. No. 820,662, Apr. 30, 1969. This application June 25, 1971, Ser. No. 157,045
Int. Cl. B29c *17/02, 25/00*
U.S. Cl. 264—289 **3 Claims**

Conventionally heat-set, biaxially oriented polyester films such as poly(ethylene terephthalate) generally have non-uniform physical properties across the width of the film. It has been discovered that the relative uniformity of such properties across the width of the film can be significantly increased by stretching the film in the transverse direction (during the tentering step) while the surfaces of the film are maintained at a substantially uniform temperature of at least about 260° F., which is higher than was heretofore believed practical in a tentering operation.

3,702,358
CIS - 1 - HEXADECEN-1-OL ACETATE AS AN ATTRACTANT FOR ADULT MALE PINK BOLLWORM MOTHS

Nathan Green, Silver Spring, Md., and John C. Keller, Tempe, Ariz., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Original application Dec. 2, 1968, Ser. No. 780,596, now Patent No. 3,586,712, dated June 22, 1971. Divided and this application Dec. 2, 1970, Ser. No. 94,555
Int. Cl. A01n *9/24, 17/14*
U.S. Cl. 424—84 **1 Claim**

An ester, cis-7-hexadecen-1-ol acetate, also known as "hexalure" is found to be a powerful attractant under field conditions for adult male pink bollworm moths.

3,702,359
CERTAIN MICROBIAL INSECTICIDES AND METHODS OF PREPARATION THEREOF

Howard T. Dulmage, Jose A. Correa, and Adelaido J. Martinez, Brownsville, Tex., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed Oct. 30, 1970, Ser. No. 85,787
Int. Cl. A01n *15/00*
U.S. Cl. 424—93 **3 Claims**

Two biological insecticides and method of preparation thereof are disclosed. In the one method polyhedral inclusion bodies of the nuclear polyhedrosis virus of the cabbage looper, *Trichoplusia ni*, were precipitated from concentrated suspensions in 4–6% solutions of lactose upon addition of acetone. Alternate steps to the method of preparation are also provided. A dry resuspendable product (in water) is obtained.

In the second method, the spore-crystalline toxin complex of *Bacillus thuringiensis* was precipitated from concentrates derived from fermentation beers resuspended in 4–6% lactose upon addition of acetone. A dry powder containing the crystalline toxin live spore complex is thus provided.

3,702,360
METHOD OF CONTROLLING INSECTS ON ANIMALS WITH ORGANOTIN COMPOUNDS

Dell Derek Paul Graham, Balgowlah, New South Wales, Australia, assignor to M & T Chemicals (Australia) Pty. Limited, Unanderra, New South Wales, Australia
No Drawing. Filed May 23, 1969, Ser. No. 827,148
Claims priority, application Australia, May 23, 1968, 38,234/68
Int. Cl. A61k *27/00;* **A61l** *23/00*
U.S. Cl. 424—288 **5 Claims**

This invention is directed to an insect parasiticidal composition for the control and elimination of insect parasites living on or in the fleeces and/or hides of domestic animals, comprising as active ingredient at least one member selected from the group consisting of organotin compounds.

3,702,361
INSECTICIDAL METHODS USING N-SUBSTITUTED HETEROCYCLIC PHENACYL HALIDES AND YLIDS

Wendell Gary Phillips, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Nov. 21, 1969, Ser. No. 878,918
Int. Cl. A01n *9/22*
U.S. Cl. 424—263 **20 Claims**

Pyridinium, halides having an N-(phenacyl) substituent and the corresponding ylids obtained therefrom by alkaline treatment are useful as insecticides.

3,702,362
USE OF UREIDO DIPHENYL SULFONES IN THE TREATMENT OF MAREK'S DISEASE

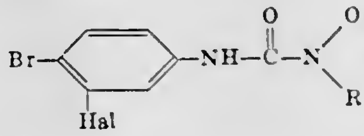
Tsung-Ying Shen, Westfield, David B. R. Johnston, Warren, and Theodore A. Maag, New Shrewsbury, N.J., assignors to Merck & Co., Inc., Rahway, N.J.
No Drawing. Filed Sept. 17, 1970, Ser. No. 73,246
Int. Cl. A61k *27/00*
U.S. Cl. 424—322 **14 Claims**

Certain diphenyl sulfones having 4,4'-substituents, the substituents being independently nitro, amino, acetamido, formamido, loweralkoxycarbonyl, or ureido, can be used to reduce mortality and decrease lesion incidence of poultry exposed to Marek's disease. The use of these compounds and compositions comprising the compounds as active ingredients are provided.

3,702,363
FUNGICIDAL AND NEMATOCIDAL COMPOSITIONS AND METHODS OF COMBATING FUNGI OR NEMATODES USING N-(4-HOMO-3 - HALOPHENYL)-N' - LOWER ALKYL - N'-LOWER ALKOXY-UREA

Henry Martin, Basel, Hans Aebi, Riehen, and Ludwig Ebner, Stein, Aargau, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Division of application Ser. No. 870,916, Oct. 2, 1969, now Patent No. 3,617,249, which is a division of application Ser. No. 543,541, Apr. 19, 1966, now Patent No. 3,497,541, which in turn is a continuation-in-part of application Ser. No. 191,442, May 1, 1962, now Patent No. 3,288,851. This application May 21, 1971, Ser. No. 145,949
Int. Cl. A01n *9/12, 9/20*
U.S. Cl. 424—322 **5 Claims**

This invention relates to the use as fungicides and nematocides of compounds having the formula



wherein Hal represents bromine or chlorine and R_1 and R_2 each represents a lower alkyl.

3,702,364
STABILIZED CHLORAMPHENICOL COMPOSITION

Malcolm P. Boghosian, Long Beach, and John W. Wilson, Jr., Los Altos, Calif., assignors to Allergan Pharmaceuticals, Santa Ana, Calif.
No Drawing. Continuation-in-part of abandoned application Ser. No. 605,713, Dec. 29, 1966. This application Feb. 9, 1970, Ser. No. 9,986
Int. Cl. A61k *21/00*
U.S. Cl. 424—324 **2 Claims**

A physically and chemically stable chloramphenicol solution comprising relatively small amounts of chloramphenicol stabilized by a polyoxyethylene derivative of a fatty acid in combination with a long-chain polyol.

3,702,365
4-ACETOACETYL AMINO-DIPHENYLAMINE IN COMPOSITIONS AND METHODS FOR TREATING PAIN, FEVER AND INFLAMMATION

Kurt Thiele, Barcelona, Spain, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany
No Drawing. Filed June 17, 1971, Ser. No. 154,202
Int. Cl. A61k *27/00*
U.S. Cl. 424—324 **15 Claims**

4-acetoacetylamino-diphenylamine is useful in pharmacological preparations to reduce fever. It also has antiphlogistic and analgesic activity while at the same time showing very low toxicity.

3,702,366
BIS-(TETRAHALOETHYL) TRISULFIDES AS SEED DISINFECTANTS

Gustave K. Kohn, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Original application Nov. 29, 1968, Ser. No. 780,292, now Patent No. 3,574,767, dated Apr. 13, 1971. Divided and this application Sept. 21, 1970, Ser. No. 74,232
Int. Cl. A01n *9/00, 9/12*
U.S. Cl. 424—336 **4 Claims**

Compositions and methods of disinfecting seeds with bis-(tetrahaloethyl) trisulfides are provided.

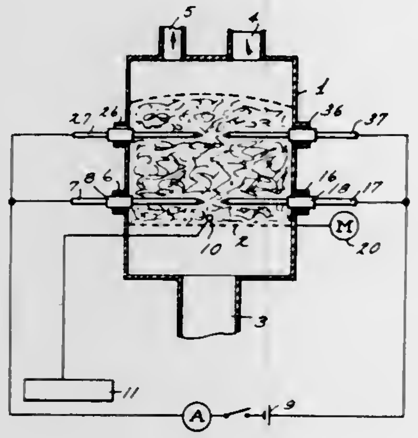
3,702,367
PROCESS AND ARRANGEMENT FOR STARTING REACTOR FOR REACTION OF FERROSILICON WITH GASEOUS HALOGENATION AGENT

Heinz-Rudiger Vollbrecht, Rheinfelden/Baden, Germany, assignor to Deutsch Gold-und Silber-Schudeanstalt vormals Roessler, Frankfurt (Main), Germany

Filed March 19, 1971, Ser. No. 125,938

Int. Cl. H05b *3/60*

U.S. Cl. 13—23 **6 Claims**



The reaction of ferrosilicon with a gaseous halogenation agent is started by flowing a protective gas upwardly through a ferrosilicon charge on a grate, conducting an electric current through the charge at least until a temperature of 200° C. is reached and then replacing the protective gas by the halogenation agent, e.g., hydrogen chloride gas, and stopping the flow of electric current as soon as the exothermic reaction is self-sustaining. An apparatus for carrying out this process is also disclosed.

3,702,368
CRUCIBLES

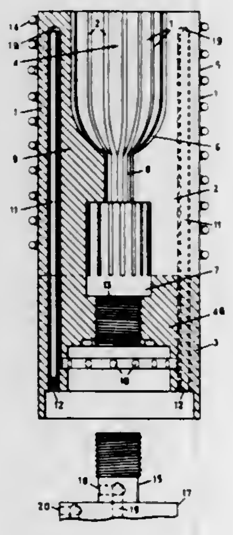
David Ainsworth Hukin, The Cottage, 20 Manor Road, Oakley, England

Filed Dec. 30, 1970, Ser. No. 102,608

Claims priority, application Great Britain, Jan. 9, 1970, 1,139/70

Int. Cl. H05b *5/16*

U.S. Cl. 13—26 **7 Claims**



The invention provides an improved design for a crucible for the melting of materials by means of radio frequency eddy currents induced in the materials. A segmented platform is located intermediate an open end of the crucible and a closed base at the opposite end, in a region where the crucible wall is segmented, thereby to separate a melt from the "cold spot" in the crucible caused by the electrical short circuit of the closed base end. The outer surface of the wall segments is curved and defines a single cylindrical surface to facilitate fitting within a primary induction coil.

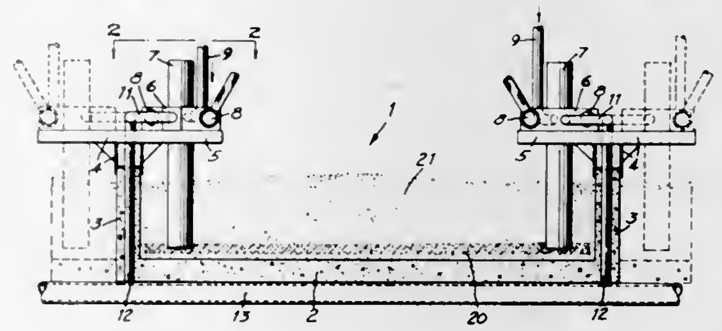
3,702,369
SILICON CARBIDE FURNACE

John Bell, Chippawa, Ontario, Canada, assignor to Norton Company, Worcester, Mass.

Filed Jan. 7, 1971, Ser. No. 104,622

Int. Cl. H05b *3/60*

U.S. Cl. 13—20 **3 Claims**



This invention relates generally to furnaces which are useful in the production of silicon carbide, and particularly to an improved manner of supporting and locating the electrodes utilized in such furnaces.

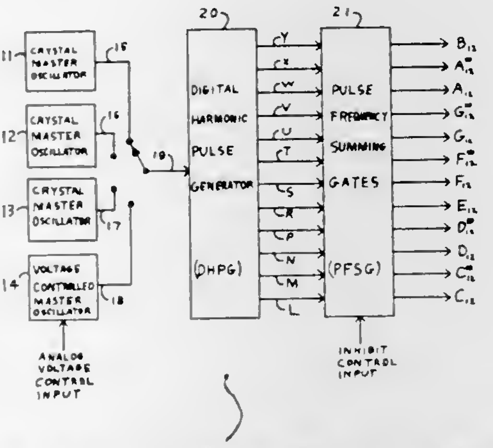
3,702,370
DIGITAL TONE GENERATOR SYSTEM FOR ELECTRONIC ORGAN EMPLOYING A SINGLE MASTER OSCILLATOR

John Ray Hallman, Jr., Green Bank, W. Va.

Filed May 19, 1971, Ser. No. 144,874

Int. Cl. G10h *1/00*

U.S. Cl. 84—1.01 **6 Claims**


11
CRYSTAL MASTER OSCILLATOR
12
CRYSTAL MASTER OSCILLATOR
13
CRYSTAL MASTER OSCILLATOR
14
VOLTAGE CONTROLLED MASTER OSCILLATOR
ANALOG VOLTAGE CONTROL INPUT
15
16
17
18
19
20
DIGITAL HARMONIC PULSE GENERATOR
(DHPG)
21
PULSE FREQUENCY SUMMING GATES
(PFSG)
INHIBIT CONTROL INPUT
Y
X
W
V
U
T
S
R
P
N
M
L
B
A
A
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G
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C

For use in electronic organs and the like, an electronic circuit for generating a number of signals, the frequencies of which may correspond to the notes of the musical scale, comprises a single master oscillator producing an alternating signal coupled to a harmonic pulse frequency generator producing a number of harmonically related pulse frequency outputs which are selectively connected to summing means, each summing means producing a single output frequency which corresponds to a note of a musical scale. Twelve summing means may be connected selectively to produce the twelve notes of a musical scale.

3,702,371
SPACER-DAMPER FOR ELECTRICAL POWER LINES

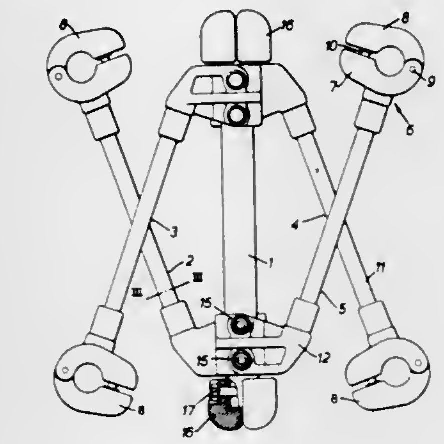
Walter Bloch, Leatherhead, and Christopher Richard Stevens, Crawley, both of England, assignors to Bowthorpe-Hellermann Limited

Filed Jan. 18, 1971, Ser. No. 106,998

Claims priority, application Great Britain, Jan. 21, 1970, 3,040/70

Int. Cl. H02g *7/14, 7/12*

U.S. Cl. 174—42 **5 Claims**



This invention concerns a line conductor spacer including a plurality of spacer arms one for each conductor and preferably formed from one or more stranded cables, relatively movable jaws on each arm to engage and clamp onto its respective conductor, a spacer arm carrying member from which the spacer arms extend, and weight means secured to the arm carrying member for damping movements of the conductors.

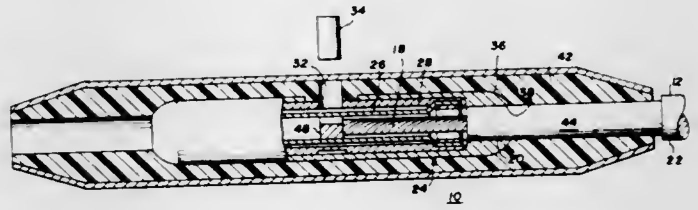
3,702,372
MOLDED CORONA SHIELD FOR A HIGH VOLTAGE COUPLING

Arthur M. Troccoli, Old Bridge, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed June 21, 1971, Ser. No. 154,904

Int. Cl. H02g *15/08*

U.S. Cl. 174—73 S **8 Claims**



A molded corona shield structure for a high voltage coupling, molded about the outer surface of the coupling and extending beyond the end thereof with an axial passage therethrough to permit entry of a conductor through such corona shield into the inner cavity of such coupling while making a tight fit with the exposed cable insulation. The corona shield is molded from a semi-conductive material composed of elastomeric materials containing a high percentage of highly conductive carbon black. Placed about the outer surface of the corona shield and the coupling is an insulating jacket so arranged as to form an intimate void free interface between the inner surface of the insulating jacket and the outer surface of the corona shield. A semi-conductive layer placed about the outer surface of the insulating jacket may be suitably joined to the semi-conductive outer layer of a cable by means of semi-conductive tape to finish the splice.

3,702,373
INTRINSICALLY STABLE SUPERCONDUCTIVE CONDUCTOR

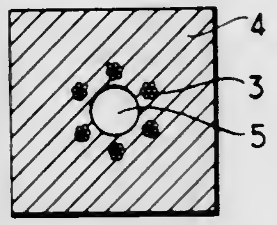
Jean-Francois Ecomard, Chilly-Mazarin, and Jacques Maldy, Wissous, both of France, assignors to Compagnie Generale D'Electricite, Paris, France

Filed March 1, 1972, Ser. No. 230,717

Claims priority, application France, March 5, 1971, 7107722

Int. Cl. H01b *5/00, 7/34*

U.S. Cl. 174—126 CP **8 Claims**



Intrinsically stable superconductive conductor enabling a tube made of stabilizing metal to be dispensed with, comprising filaments composed of several strands 10 to 50 microns in diameter, each of the said filaments being covered by a very fine layer of metal, the unit formed by seven of these filaments constituting a strand, said strands being coated by extrusion with a cover made of aluminum having high mechanical resistance.

3,702,374
COLOR VIDEO SIGNAL RECORDING AND REPRODUCING APPARATUS WITH PILOT SIGNAL FOR AUTOMATIC COLOR CONTROL

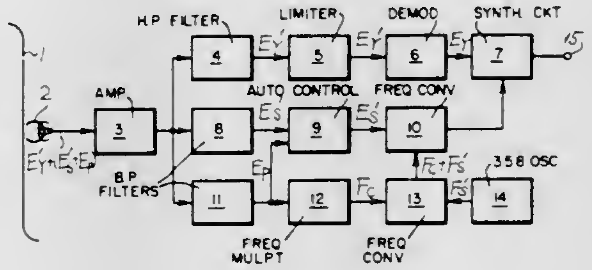
Toshihiko Numakura, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed April 13, 1970, Ser. No. 27,715

Claims priority, application Japan, April 17, 1969, 44/29866The portion of the term of this patent subsequent to May 25, 1988, has been disclaimed.

Int. Cl. H04n *9/02*

U.S. Cl. 178—5.2 R **7 Claims**



In a color video signal recording and reproducing apparatus that records and reproduces a pilot signal along with the color video signal, so that any amplitude fluctuating component of the reproduced chrominance signal resulting from the recording and reproducing operations has its counterpart or corresponding variation in the pilot signal, the reproduced modulated chrominance signal and pilot signal are mixed to provide a mixed signal which is subjected to amplitude control, the pilot signal is separated from the amplitude-controlled mixed signal, variations in the pilot signal thus separated are detected, and such detected variations are employed for determining the amplitude control exerted on the mixed signal, whereby to diminish undesired variations in the chrominance signal derived from the amplitude-controlled mixed signal.

3,702,375

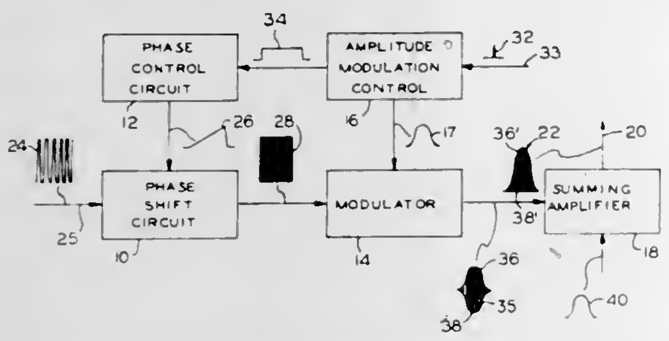
AMPLITUDE MODULATION TEST CIRCUIT

David J. Jurgensen, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed March 17, 1971, Ser. No. 125,091

Int. Cl. H04n *9/02*

U.S. Cl. 178—5.4 TE **7 Claims**



A phase shift circuit progressively shifts the phase of a carrier prior to modulation of the carrier in a balanced modulator with a sine wave test pulse which has a time duration equaling a few cycles of the carrier. The modulator output has a sine wave envelope which should be symmetrical about a horizontal axis in an oscilloscope display. A similar sine wave pulse is added to this output of the correct amplitude and phase to cause all of the envelope to be on one side of such axis. If this pulse is sent through a circuit under test and such circuit is operating correctly, one boundary of the envelope in the output is a straight line coincident with such axis. The test pulse has a fixed phase relationship with the carrier so that corresponding cycles of the carrier occupy the same positions in the envelope in the absence of the progressive phase shift referred to above. Under these conditions, the actual coincidence of one boundary of the envelope with a straight line cannot be accurately determined in the oscilloscope display. The progressive phase shift, however, fills the envelope with traces of the carrier to provide a substantially continuous boundary or edge of the envelope for comparison with a straight line.

3,702,376

COMB FILTER CIRCUIT

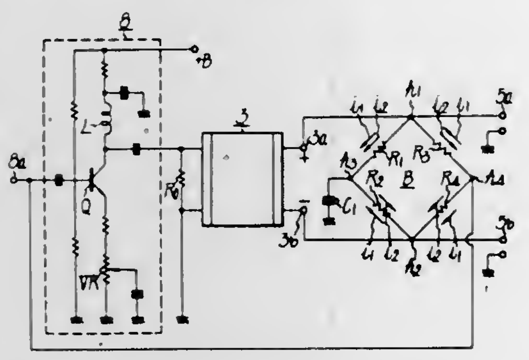
Katsuo Isono, Tokyo, and Hisao Okada, Kanagawa-ken, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 14, 1970, Ser. No. 97,936

Claims priority, application Japan, Dec. 16, 1969, 44/101205; Jan. 29, 1970, 45/9259

Int. Cl. H03n *9/38*

U.S. Cl. 178—5.4 R **8 Claims**



A comb filter circuit for separating luminance and chrominance signal components from a composite color television signal transmitted with the luminance and chrominance signal components in a frequency interleaved relation, comprises a delay means for delaying the composite color television signal by one horizontal scanning period and a bridge circuit connected to the delay means and consisting of four sections of substantially equal impedance. To the bridge circuit the delayed and non-delayed composite color television signals are suppled and therein the addition and the subtraction of both signals are performed, so that the luminance and chrominance signals are derived separately from the output terminals of the bridge circuit.

3,702,377

APPARATUS FOR CONVERTING SUPPRESSED CARRIER CHROMINANCE SIGNALS INTO PAL FORMAT

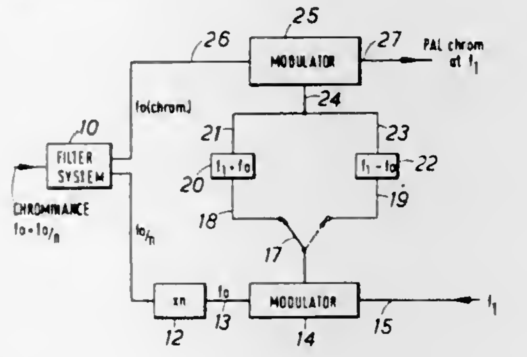
James A. Kerr; Bernhard J. Rogers, both of London, and Leslie J. Sutherland, Harrow, all of England, assignors to The Rank Organisation Limited, Millbank, London, England

Filed Sept. 18, 1970, Ser. No. 73,349

Claims priority, application Great Britain, Sept. 18, 1969, 46,124/69

Int. Cl. H04n *9/36*

U.S. Cl. 178—5.4 P **6 Claims**



Suppressed carrier chrominance signal is translated to a desired frequency and in PAL form using a pilot signal at a sub-multiple of carrier frequency. Sum and difference signals are formed from a carrier frequency harmonic of the pilot and a wave at the desired frequency and appear alternately from line to line. These are combined with the chrominance signal to provide a desired PAL signal.

3,702,378

METHOD FOR TRANSMITTING TELEVISION-COMPATIBLE VIDEO AND AUDIO INFORMATION BY MEANS OF AUDIO FREQUENCY AND DEVICE FOR PRACTICING THE METHOD

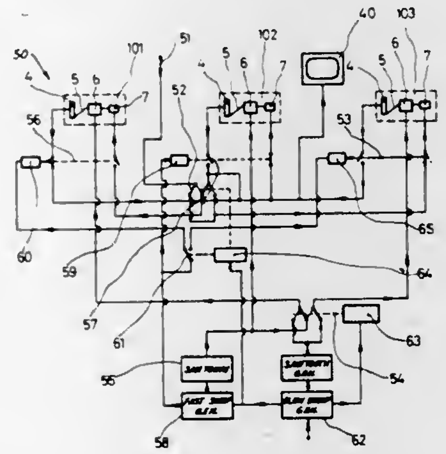
Richard Bogenberger, Oberneuching; Heinz F. K. Busch, Riemerling; Walter Kroy, Munich, and Walter E. Mehnert, Ottobrunn, all of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH

Filed April 20, 1970, Ser. No. 29,826

Claims priority, application Germany, April 28, 1969, P 19 21 702.8

Int. Cl. H04n *1/02*

U.S. Cl. 178—5.8 R **12 Claims**



A transmitter emits a high frequency carrier signal having relatively narrow modulation band of which the greater portion thereof is used for handling video information and the remainder is used for audio information. The video information is first stored in suitable storage tubes and is then retrieved and applied to the frame sweep controls of a conventional television receiver while simultaneously supplying to the audio portion thereof the audio signal above mentioned.

3,702,379

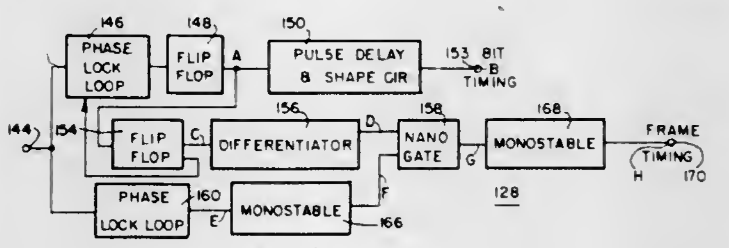
DATA TRANSFERRING SYSTEM UTILIZING FRAME AND BIT TIMING RECOVERY TECHNIQUE

James W. Peterson, Elmhurst, and John A. Tempka, Glenview, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 6, 1970, Ser. No. 61,730

Int. Cl. H04j *3/06*

U.S. Cl. 179—15 BS **17 Claims**



The transmitter-encoder of the data transferring system includes a combiner which develops an information signal by sequentially sampling the output states of a plurality of data sources. A timing signal generator develops bit and frame timing control signals for the combiner and a carrier and two pilot signals which are synchronized with the control signals to facilitate timing recovery at a receiver-decoder of the data transferring system. A composite signal comprised of an encoded information signal, carrier and pilots is transferred to the receiver through a medium which might produce abnormal information, such as an undesired frequency shift or phase perturbations, in the signal at the receiver-decoder input. The receiver includes circuitry which derives the carrier signal to facilitate demodulation. A demodulation circuit establishes the difference of each of the pilot signals and the encoded information signal from the carrier to produce two difference mixing signals and a difference information signal which have any frequency shift caused by the medium eliminated therefrom. One of the two difference mixing signals is utilized to reconstruct the bit timing signal and the other mixing signal along with a control signal derived from the bit timing signal is utilized to provide a frame timing signal which does not have any frequency or phase ambiguity. The bit and frame timing signals operate a bit separator included in the receiver which selectively channels the decoded data from the information signal to each of a plurality of data utilization devices corresponding to each of the data sources. A monitor signal which is synchronized with the data signal and which has a known pulse code may form part of the information signal to facilitate secure data transmission.

3,702,380

QUEUE FOR ELECTRONIC TELEPHONE EXCHANGE

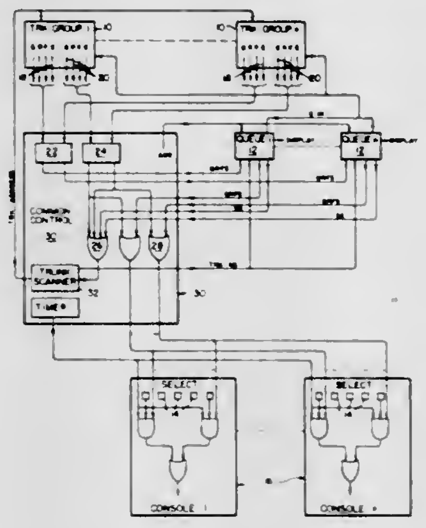
Klaus Gueldenpfenning, Penfield; Uwe A. Pommerening, and Stanley L. Russell, both of Webster, all of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Jan. 21, 1971, Ser. No. 108,380

Int. Cl. H04q *3/64*

U.S. Cl. 179—27.0 **6 Claims**

The identifying number of the trunk circuit and a mark are stored in a set of recirculating stores such as in the queue when the trunk circuit is seized in response to an incoming call. If the queue is empty and an operator is available, the queue directs the call to an operator loop. If all of the operators are busy, the number and mark are stored until one is available. The trunks are served in the same sequence in which their numbers are entered in the registers. Each time the trunk scanner of the common control finds a marked trunk, its identifying number is compared with the stored numbers. If a match is not found and the queue is not already full, the trunk number and mark are entered at the end of the queue. If the marked trunk matches the first marked number in the stores, and an operator is available, the queue signals the common control to serve the marked trunk and erases the corresponding mark in the queue. First in, first out is ensured by running the stores through a complete cycle on each operation. An output display drive circuit is included to provide a visible indication of the number of calls in the queue at any time.



3,702,381

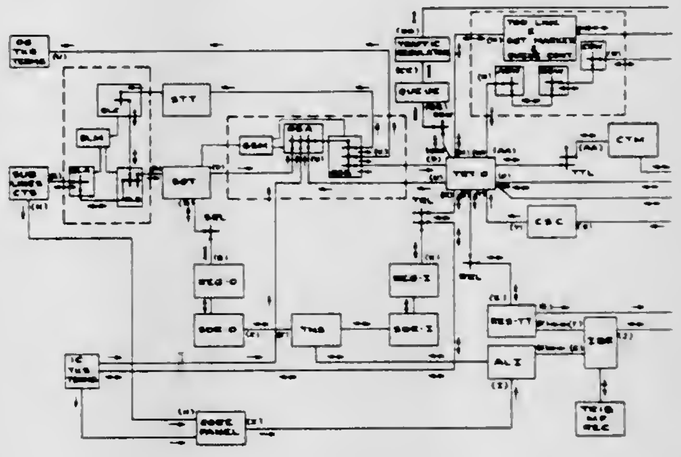
TELEPHONE SWITCHING SYSTEM INCLUDING TOLL SERVICE DESK

Don Edward Halbedel; Benjamin J. Bagwell, both of Galion; James Leroy Horning, Crestline; Erik Axel Lissakers, Perrysville; Joseph Harold Long, Galion, all of Ohio; Cameron C. Schweitzer, Runnemede, N.J., and Jack E. Callender, deceased, late of Galion, Ohio (by Evelyn N. Callender, administratrix), assignors to North Electric Company, Galion, Ohio

Filed March 12, 1969, Ser. No. 806,787

Int. Cl. H04m *3/42*

U.S. Cl. 179—27 FF **47 Claims**



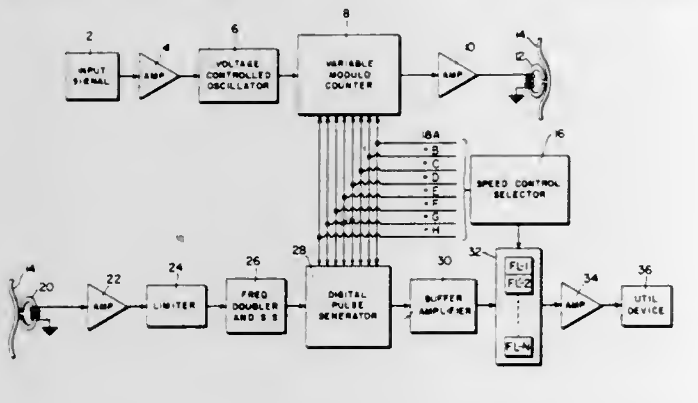
A telephone central office system incorporating a toll service desk with special switching equipment including toll recording trunks which reduces the extent of operator participation in processing telephone calls, and which uses a reduced number of trunks to effect improved service. Operators at the toll service desks can handle call items in any order, but cannot release a call until all requirements are met. In calls requiring operator participation, the operator may release once the service necessary to establish or forward the call is given, and is relieved from manually having to make out tickets on any calls except on calls to subscribers in non-dialable offices involving alpha-numeric directory numbers.

Special features of the system include flash recall of an operator at any time on any call, automatic answer time display upon flash recall from a non-coin station, automatic answer time display during the initial period and elapsed time display after the initial period upon flash recall from a coin station, reestablishment without rekeying of a call in the forward direction after flash recall, automatic or manual insertion of time and charge and class-change, and changing a call status by the operator from station-to-station to person-to-person and vice versa.

3,702,382
FREQUENCY DIVIDER

Ivars P. Breikss, Littleton, Colo., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Aug. 11, 1970, Ser. No. 62,870
Int. Cl. G11b *19/26;* **H02p** *5/34;* **H03k** *23/00*
U.S. Cl. 179—100.2 R **10 Claims**

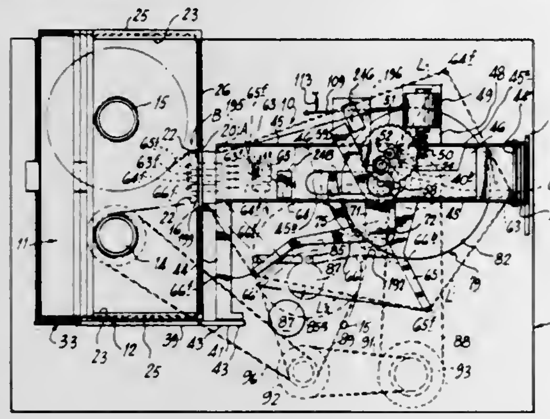


A recording and reproducing apparatus for frequency modulation recording of an input data signal wherein the recording carrier frequency and the speed of driving a recording medium are concurrently selected in a digitally presettable sequence wherein the members of the sequence may be related to each other by any integral number. Similarly, the reproducing of a recorded FM signal is effected by an apparatus using the selected recording medium drive speed and a frequency discriminator digitally adaptable to the preset recording carrier frequency.

3,702,383
TAPE LOOP FORMING AND THREADING MECHANISM FOR USE WITH A MAGNETIC RECORDING AND REPRODUCING APPARATUS

Katsu Inaga, and Yotaro Miura, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 37,694, May 15, 1970. This application May 6, 1971, Ser. No. 140,666
Int. Cl. G11b *15/66, 23/04*
U.S. Cl. 179—100.2 T **18 Claims**

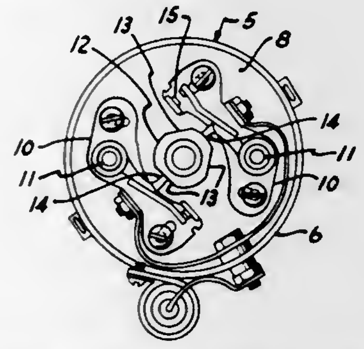


In a magnetic recording and/or reproducing apparatus, take-up and supply reels, preferably in a cassette or cartridge and having a tape wound on the reels and extending therebetween, are rotatably mounted on the chassis which also supports rotary magnetic head means movable in a circular path spaced from the reels and coinciding with the periphery of a tape guide drum, and tape guiding fingers are initially disposed close to each other to engage the tape between the reels and, while close to each other, are moved as a group to withdraw tape from the reels in the cassette, whereupon, the fingers are moved away from each other to form a loop in the tape withdrawn from the reels and then to drop the loop from the fingers and guide the inner surface of the loop into contact with at least part of the guide drum.

3,702,384
DISTRIBUTOR FOR SIX CYLINDER INTERNAL COMBUSTION ENGINE INCLUDING TWO CAM OPERATED CONTACT BREAKER ASSEMBLIES

Cesar M. Garza, Municipio Lipre No. 191, Mexico City 13, Mexico

Filed May 16, 1971, Ser. No. 153,237
Int. Cl. H01b *19/62*
U.S. Cl. 200—19 A **2 Claims**

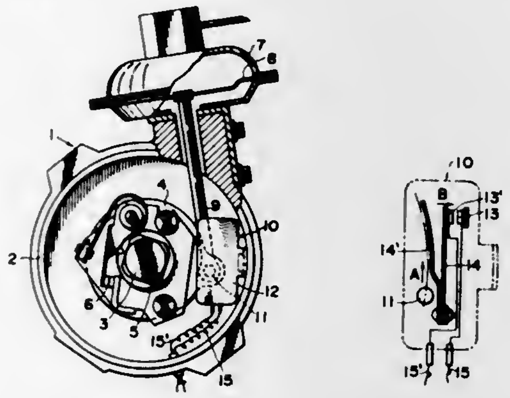


This invention consists of a vertically disposed cup-shaped housing mounted on a shaft that is connected to the cam shaft of an internal combustion engine. The aforesaid cup-shaped housing contains a mechanism supporting plate in the upper portion thereof on which is mounted two opposed arms having electrical contacts on one end thereof and a breaker cam follower projecting outward from one side of each arm and in contact with flat surfaces interconnected by curved surfaces that are located on the periphery of a breaker cam that is mounted on the upper end of the aforesaid shaft. The aforesaid flat surfaces are in equal spaced relation around the breaker cam, and are not as long as the curved surfaces.

3,702,385
DISTRIBUTOR DEVICE WITH VACUUM ADVANCE MECHANISM OPERATED SWITCH STRUCTURE ATTACHED TO HOUSING

Shigetake Yoshimura, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima-ken, Japan

Filed May 20, 1971, Ser. No. 145,215
Claims priority, application Japan, June 3, 1970, 45/55173
Int. Cl. H01b *21/80*
U.S. Cl. 200—31 **9 Claims**

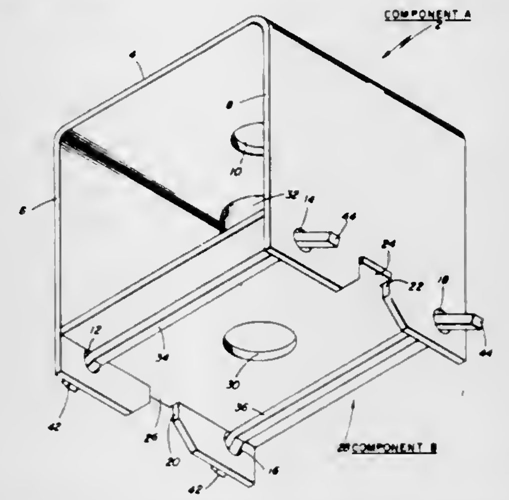


A distributor device includes a rotating shaft driven by an engine and having a cam with which ignition points are opened, a movable plate rotatable against a case where ignition points are mounted, a diaphragm means, viz. vacuum spark advancing means operated by the vacuum of an inlet manifold in an engine and connected with the movable plate in order to change the on-off timing of the ignition points, and a vacuum electric switching means opened and closed by the operation of the diaphragm means.

3,702,386
MECHANICAL COUPLING ARRANGEMENT

Richard A . Foerstner, Iowa City, Iowa, assignor to Amana Refrigeration Inc., Amana, Iowa

Filed April 6, 1971, Ser. No. 131,618
Int. Cl. H05b *9/06;* **B01d** *3/00;* **B23k** *1/16*
U.S. Cl. 219—10.55 **2 Claims**

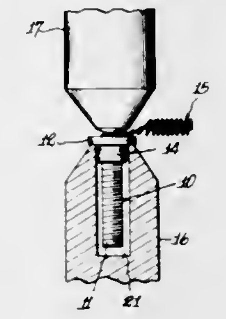


A mechanical arrangement is disclosed for interconnecting structures by exerting equidistant upward forces to one component and an intermediate downward force to the adjacent component. A twisting motion of rotatably disposed locking members actuates the coupling. In an illustrative embodiment a magnetron energy generator and magnetic field producing means, such as an electromagnet, are coupled together by support and housing structures actuated by rigid elongated metallic bars which provide a positive locking force.

3,702,387
ELECTRICAL CONNECTIONS

Leo I. Klein, Clairton, Pa., assignor to Emerson Electric Co., St. Louis, Mo.

Filed June 4, 1971, Ser. No. 150,010
Int. Cl. B23k *9/28*
U.S. Cl. 219—91 **2 Claims**



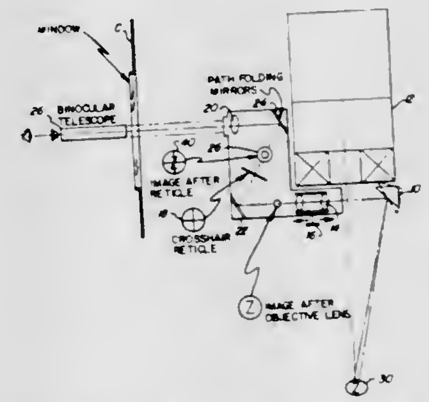
In an electric resistance heating element, the invention relates to the assembly of a resistor coil to a terminal pin to provide mechanical and electrical connection therebetween. The assembly is particularly suited for use in strip heaters wherein the coil is connected to the flat head of a terminal bolt.

A group of convolutions of the resistor coil are flattened against the bolt head and welded thereto by a resistance welding operation. In the method disclosed, the shank of the bolt is disposed within an opening in one welding electrode of a welding machine with the bolt head overlying the tip of such electrode, and the group of convolutions of the coil are placed against the flat surface of the bolt head. The other welding electrode has a rounded tip and as this electrode is moved toward said one electrode, its rounded tip flattens the group of convolutions in overlapping relation on the flat surface of the bolt head. With the flattened convolutions and the bolt head firmly gripped between the welding electrodes, welding current is caused to flow between the electrodes to weld the flattened convolutions to the flat surface of the bolt head. Those flattened convolutions at the center of the rounded tip of said other electrode are fully fused to the flat surface of the bolt head, whereas the convolutions off the center of such rounded tip have a stick weld to the flat surface. Thus, not only is a low resistance electrical connection made by the fully fused convolutions, but a good mechanical connection is made by the stick-welded convolutions.

3,702,388
OPTICAL VIEWING SYSTEM FOR WORK CHAMBERS

James R. King, Tustin, Calif., assignor to Union Carbide Corporation, New York, N.Y.

Filed Nov. 9, 1970, Ser. No. 87,854
Int. Cl. B23k *15/00*
U.S. Cl. 219—121 EB **8 Claims**

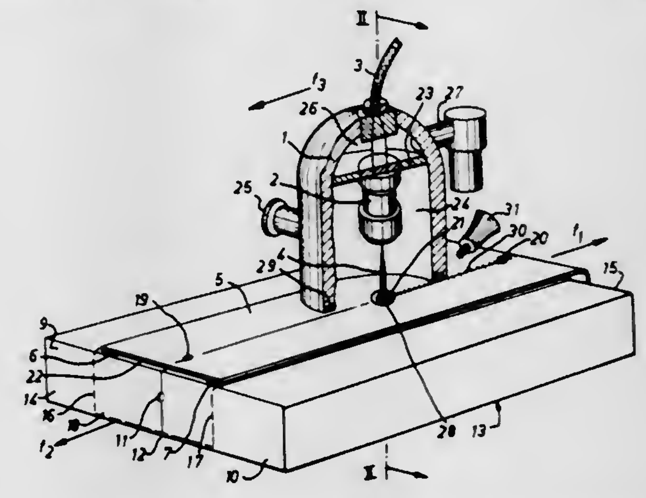


An optical system for illuminating, viewing and aligning work in a vacuum chamber. The apparatus is predicated on the use of a clear or reflectively coated glass strip which becomes and remains a mirror surface as vapor from the material being worked is deposited on the glass surface. The duration of the permitted exposure is a function of the material type and the quantity of vapor released. The glass strip is then indexed to expose a new clear surface.

3,702,389
WELDING BY ELECTRON BOMBARDMENT

Jean-Pierre Peyrot, 1, place de la Division Leclerc, Villejuif, France

Filed Aug. 3, 1970, Ser. No. 60,534
Int. Cl. B23k *15/00*
U.S. Cl. 219—121 EB **5 Claims**



Electron beam welding apparatus wherein means are provided for welding a joint sealed by a sheet of foil and thereafter depositing a plastic product on the weld head to prevent contamination.

3,702,390
ARC WELDING

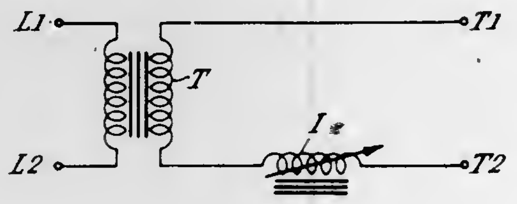
Paul Desmond Blake, Bishops Stortford; Roy Douglas Johnston, Braughing Ware; Brian Phelps, Roydon near Harlow; Edwin Albert Chapman, Potters Bar, and Ronald Leonard Bartlett, Chestnut, all of England, assignors to Murex Welding Processes Limited, Hertfordshire, England

Division of Ser. No. 661,637, Aug. 18, 1967, Pat. No. 3,573,426. This application Feb. 10, 1970, Ser. No. 14,888

Claims priority, application Great Britain, Oct. 31, 1966, 48,640/66; Nov. 1, 1966, 48,972/66; Nov. 8, 1966, 49,927/66; March 15, 1967, 12,186/67; March 23, 1967, 13,776/67; April 5, 1967, 15,578/67; April 5, 1967, 15,579/67; April 10, 1967, 16,380/67

Int. Cl. B23k *35/22*

U.S. Cl. 219—146 **4 Claims**



An arc welding electrode for use in welding processes in air; devoid of external flux, and having a mild steel sheath enclosing a core containing by weight of the electrode 1.5–4.5 percent aluminum, 0.3-1.6 percent manganese, 0.0–0.6 percent silicon, 5–15 percent calcium fluoride, 1–8 percent arc stabilizers of magnesium oxide, alkali or alkaline earth metals, 1–4 percent slag modifiers of alumina, silica, titania, manganese oxide, iron oxide or zirconia, and the remainder iron.

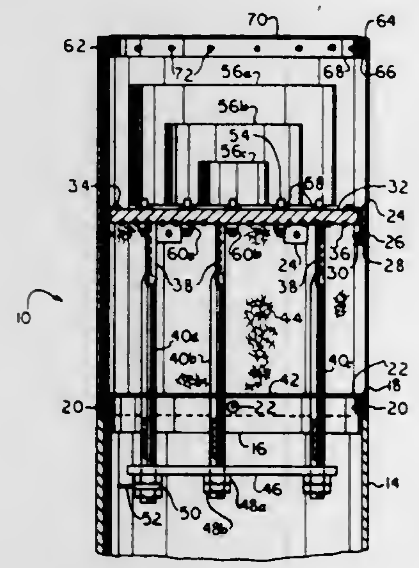
3,702,391
INFRARED CONCENTRATING EMITTER

Jerry N. Wellnitz, La Mesa, and Richard S. Dummer, Escondido, both of Calif., assignors to Rohr Industries, Inc.

Filed Oct. 24, 1969, Ser. No. 869,263

Int. Cl. H05b *3/10*

U.S. Cl. 219—553 **8 Claims**



A metallic plate coated on one side with plasma sprayed stainless steel is mounted transversely within a cylindrical housing. Metallic cylinders having different lengths are concentrically disposed within the housing and extend from coated side of plate. Plate is electrically heated, causing coating thereon to radiate infrared rays which are filtered by a polyimide sheet extended across end of housing.

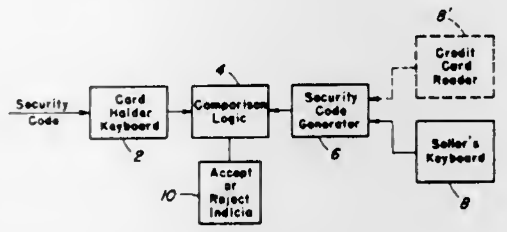
3,702,392
METHODS FOR VERIFYING THE IDENTITY OF A CARD HOLDER AND APPARATUS THEREFOR

Lloyd E. St. Jean, Huntington, Long Island, N.Y., assignor to Interface Industries, Inc.

Filed Nov. 20, 1970, Ser. No. 91,504

Int. Cl. G06k *7/00*

U.S. Cl. 235—61.7 B **23 Claims**



Methods and apparatus for verifying the identity of a bearer of a card having a plural digit identifying number and an associated security code are provided in accordance with the teachings of the present invention. Each card holder is assigned a security code by the card issuer and such security code is associated with certain digits of the plural digit identifying number on the card issued. In one embodiment of the present invention a card which is presented is verified by apparatus which acts to accept the security code presented by the bearer thereof, generate the security code associated with certain digits of the plural digit identifying number on the card presented and to compare the security code generated with that presented. Thereafter an indication is provided as to whether or not the card presented should be accepted based on a successful or unsuccessful comparison operation.

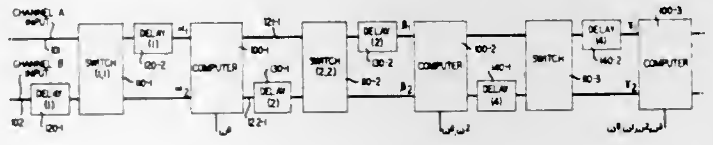
3,702,393
CASCADE DIGITAL FAST FOURIER ANALYZER

Peter Siegfried Fuss, Greensboro, N.C., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 21, 1970, Ser. No. 82,572

Int. Cl. G06f *7/38*

U.S. Cl. 235—156 **10 Claims**



A single input channel cascade FFT processor includes a plurality of substantially identical arithmetic units connected by a delay and switching arrangement for selectively delaying subsets of input data samples and intermediate results. By reordering an input sequence and thus selectively delaying, all components are operated at full capacity at all times, while a reduced amount of storage (delay) is required. Alternate embodiments provide for multiplexing a plurality of input data channels and multiplexing arithmetic units among a plurality of stages.

3,702,394
ELECTRONIC DOUBLE INTEGRATOR

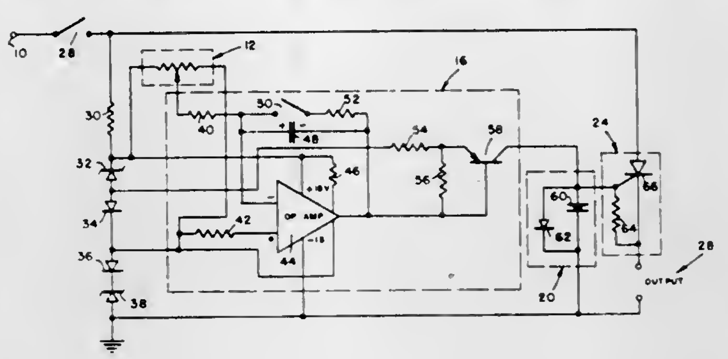
Paul J. Rainsberger, and Charles M. Dye, Jr., both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the United States Navy

Filed Sept. 17, 1970, Ser. No. 72,906

Int. Cl. G06g *7/18, 7/78*

U.S. Cl. 235—183 **1 Claim**

An electronic double integrator circuit including an accelerometer; first and second integrators, at least one of which has an operational amplifier with capacitive-resistive feedback; and a logic circuit. The system provides an output when the accumulated input derived from the accelerometer indicates that a spatial, rather than time, interval has occurred.



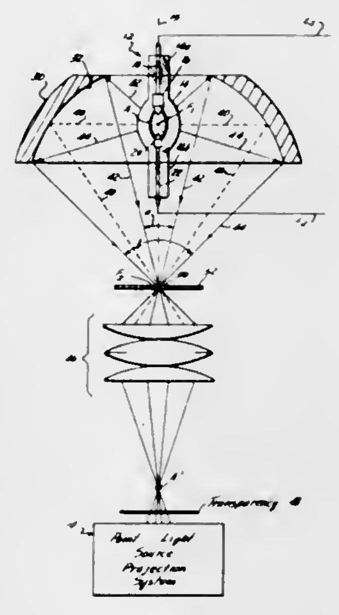
3,702,395
CONDENSER SYSTEM FOR HIGH INTENSITY LIGHT SOURCE

Gottfried R. Rosendahl, Winter Park, Fla., assignor to The United States of America as represented by the Secretary of the Navy

Filed Oct. 9, 1970, Ser. No. 79,416

Int. Cl. F21v *13/04*

U.S. Cl. 240—41.3 **1 Claim**



An elliptical mirror is utilized in combination with a xenon arc projection lamp and a high melting point metal stop to provide in one embodiment an improved vertical axis point light source for point light source projectors, and in another embodiment to provide a condensed, vertical axis beam which is annular in section for panoramic projectors using transparencies having an azimuthal scene recorded in annular form.

3,702,396
APPARATUS FOR DETECTING THE RUNNING OF RAILWAY VEHICLES OR THE LIKE

Marcel Luc Amedee Paulve, 83 Le Muy, France

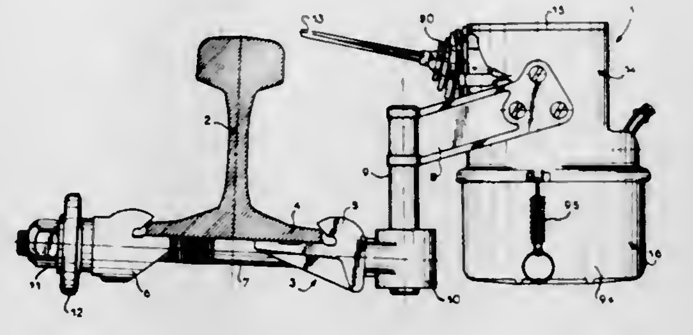
Filed Aug. 19, 1970, Ser. No. 64,981

Claims priority, application France, Aug. 19, 1969, 6928448

Int. Cl. B61l *13/02*

U.S. Cl. 246—248 **12 Claims**

An electromechanical railway traffic controller device for detecting the passage of railway vehicles or trains comprising an electric rotary switch with a vertical shaft pivoted to the switch actuating lever consisting of a long arm lying adjacent to the rail for being hit by the wheel flange of a railcar; and a damping arrangement for slowing down the spring-biased return motion of said arm to prevent said arm of being hit by every wheel of the vehicle or train.



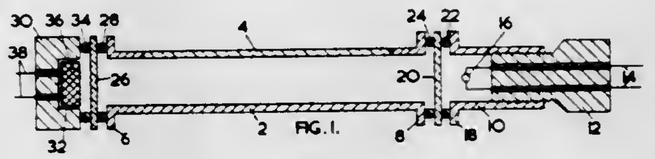
3,702,397
INFRA-RED GAS DETECTORS

Jack Graham Firth, Chapeltown, and Thomas Alwyn Jones, Dronfield, both of England, assignors to National Research Development Corporation, London, England

Filed Feb. 16, 1971, Ser. No. 115,677

Int. Cl. G01n *21/26*

U.S. Cl. 250—43.5 R **15 Claims**



Means for detecting a component of an atmosphere comprises a source of radiation and a detector arranged so as to receive and be responsive to radiation through said atmosphere from the source, the intensity of the radiation from the source increasing rapidly with respect to wavelength just below the peak of an absorption band of the chosen component, and the response of the detector decreasing rapidly with respect to wavelength just above the peak of the absorption band. Selection of source, detector and radiation filters allows detection of one component, such as methane or carbon monoxide, without falsification of the result by another component such as carbon dioxide.

3,702,398
ELECTRON BEAM APPARATUS

Christopher Geoffrey Van-Essen, Beckenham, England; Erland Maxwell Schulson, Deep River, Ontario, Canada, and Richard Hugh Donaghay, Headington, England, assignors to Cambridge Scientific Instruments Limited

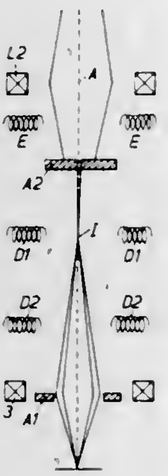
Filed Jan. 21, 1971, Ser. No. 108,408

Claims priority, application Great Britain, Jan. 21, 1970, 2,829/70; July 2, 1970, 32,059/70

Int. Cl. H01j *37/26;* **G01n** *23/22*

U.S. Cl. 250—49.5 A **4 Claims**

In electron probe apparatus modified or designed to display electron-channelling (pseudo-Kikuchi) effects by subjecting a point on a specimen surface to an electron beam scanned through a varying angle, the final lens of the beam forming system is employed as a deflection element in that an image of the source is formed in the plane of deflection means and that this plane and the specimen surface are made conjugate points with respect to the final lens. To facilitate corrections for spherical aberration in the scanning, the scanning is preferably performed on polar co-ordinates, with the beam sweeping out a conical path of slowly varying cone angle, and the result is displayed as a spirally scanned image.



3,702,399

SPECIMEN STAGE FOR AN ELECTRON MICROSCOPE

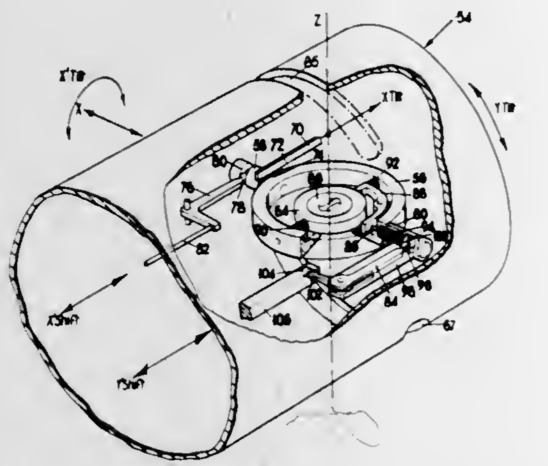
Jeffrey Harvey Lucas, nr. Saffron Walden, England, assignor to Associated Electrical Industries Limited, London, England

Filed Aug. 3, 1971, Ser. No. 168,615

Claims priority, application Great Britain, Aug. 4, 1970, 37,641/70

Int. Cl. H01j *37/20*

U.S. Cl. 250—49.5 B **9 Claims**



A specimen stage for an electron microscope which allows tilting and translation of the specimen. The translation does not shift the tilt axes. Thus, once the point of intersection of the tilt axes is aligned with the optical axis, it will remain aligned irrespective of subsequent translation of the specimen. Thus, tilting of the specimen will not affect the field of view. The stage comprises first and second gimbals, the second gimbal carrying a specimen mounting. The second gimbal can be translated with respect to the first gimbal along the second gimbal axis. The specimen mounting can be translated with respect to the second gimbal in a direction inclined to the second gimbal axis. In a preferred embodiment, the first gimbal is a tube, and the second gimbal is an annulus supported within the tube.

3,702,400

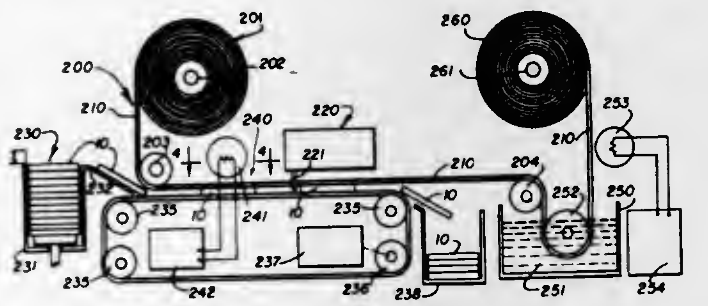
ADDRESSING APPARATUS

Ronald I. Morley, Berkeley, Calif.; Raymond W. Biernat, St. Paul, Minn., and Arnold J. Smidt-Hayer, Falls Church, Va., assignors to Dymo Industries, Inc., Berkeley, Calif.

Division of Ser. No. 643,718, June 5, 1967, Pat. No. 3,607,527. This application Feb. 18, 1971, Ser. No. 116,552

Int. Cl. B41l *45/00*

U.S. Cl. 250—65 T **9 Claims**



There is disclosed an addressing system including an addressing apparatus and addressing methods and materials used therein. A set of master cards is provided formed of porous tab card stock impregnated with a sensitizer vaporizable at 100° C. to 160° C. and having a selected area on one face thereof for the address in infrared absorbing ink; as disclosed, the master card is made by passing the porous tab card stock through a bath containing the sensitizer and a solvent therefor, after which the solvent is evaporated. The set of master cards is then employed to provide a master tape that is a strip of non-porous release material that is oleophobic and transparent to infrared radiation, and carrying thereon reverse reading copies of the addresses in the form of bodies of partially fused toner applied to one side of the master tape; the addresses are transferred from the master cards to the master tape utilizing a novel apparatus and method wherein a printing station is provided having a first source of infrared radiation thereat, first feed mechanism for feeding the master cards sequentially to the printing station and a second feed mechanism for feeding the master tape to the printing station to position a predetermined portion of the master tape immediately adjacent to the address on a master card positioned at the printing station, thereafter operating the first source of infrared radiation to vaporize from the master card sensitizer in areas corresponding to the address thereon onto the one surface of the master tape, applying a toner to the master tape to adhere toner to the sensitizer in areas corresponding to the address, and thereafter exposing the master tape carrying the powdered toner to a second source of infrared radiation for at least partially fusing the toner to provide a reverse reading copy of the address on the master tape. The toner comprises a vehicle body of wood rosin and polymerized resin, modifiers of polyamide resin and a hydrocarbon resin and pigment of carbon black. The master tape with the addresses thereon in partially fused toner is then fed to an addressing station where an envelop or other article to be addressed is placed with the surface thereof against the partially fused toner on a section of the master tape after which heat and pressure are applied thereto to transfer the bodies of toner to the envelope and fully to fuse the toner to provide on the envelope bodies of fully fused toner in areas corresponding to the address on a master card.

3,702,401

BRIDGE BALANCING CIRCUIT

William J. Parkin, Wayland, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

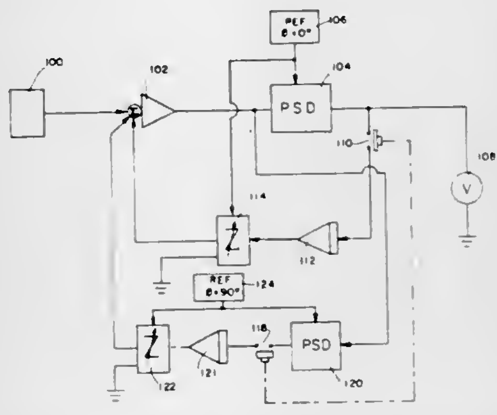
Continuation-in-part of Ser. No. 589,184, Oct. 19, 1966, abandoned. This application Nov. 22, 1968, Ser. No. 779,312

Int. Cl. H01j *39/12*

U.S. Cl. 250—210 **11 Claims**

A bridge balancing circuit is provided, in which errors in a bridge due to relatively slow changes in its parameters or in

environmental conditions are substantially eliminated. A receiving means is adapted for coupling to a bridge circuit having a signal source. The receiving means output is coupled through an integrator to an impedance which varies in accordance with the integrator output to thereby balance the bridge with respect to a reference voltage level.



3,702,402

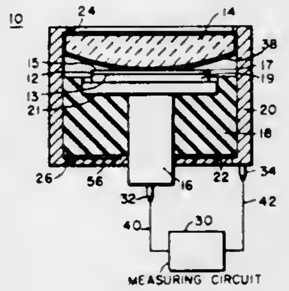
METHOD AND APPARATUS FOR LIGHT DETECTOR FABRICATION WITHOUT BRAZING

David F. Jacobs, Bethel Park, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 807,747, March 17, 1969, abandoned. This application March 2, 1971, Ser. No. 120,348

Int. Cl. H01j *39/12*

U.S. Cl. 250—216 **2 Claims**



This invention is a light detector assembly utilizing components maintained in operational relationship by compression assembly and without the use of mechanical bonding.

3,702,403

OPTICAL TESTING APPARATUS COMPRISING MEANS FOR FLOWING LIQUIDS IN FREE FALL CONDITION AT CONSTANT FLOW RATE

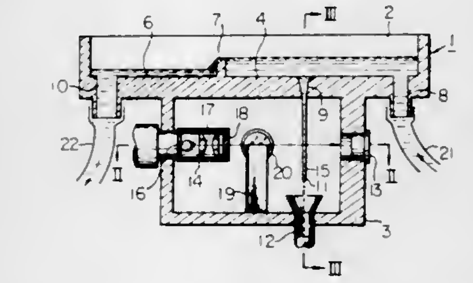
Hirotoshi Kishi, Tokyo, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1970, Ser. No. 78,112

Claims priority, application Japan, Nov. 15, 1969, 44/91172

Int. Cl. G01n *1/10, 21/06, 21/26*

U.S. Cl. 250—218 **10 Claims**



Improved photo-electric colorimeter possesses a flow system, wherein one part of a liquid to be measured falls at a constant flow rate defined substantially by a slit orifice for falling thereof and a weir for overflowing the remainder of the liquid, said falling liquid being transformed by a guiding means into a successive liquid film in a position between a light source and a photo-electric cell.

3,702,404

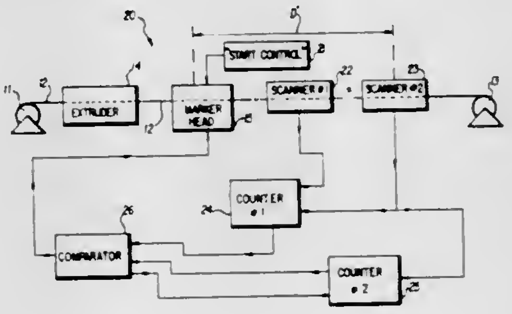
WIRE LENGTH COUNTER

Floyd P. McDermitt, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed June 29, 1971, Ser. No. 157,948

Int. Cl. G01b *7/04*

U.S. Cl. 250—219 LG **10 Claims**



This disclosure relates to a system for marking a continuously moving filament at predetermined intervals along its length comprising a marker head for applying retro-reflective indicia to the filament, and a photosensor disposed a predetermined distance from the marker head for sensing the indicia and actuating the marker head to apply subsequent indicia to the filament. In a modification of the system, a second photosensor and a counter permit the velocity of the filament to be monitored, and a comparator then compares successive velocity readings and computes the time interval required between successive applications of indicia, whereby the indicia are applied to the filament at substantially equal intervals of length irrespective of variations in the velocity of the filament.

3,702,405

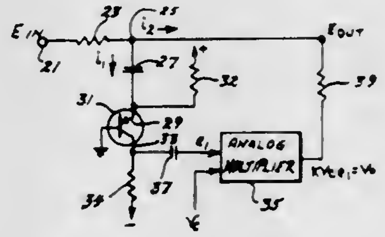
ELECTRONICALLY VARIABLE CAPACITANCE

Robert Zwirn, Encino; Ralph E. Johnson, Canoga Park, and Jacob M. Sacks, Palos Verdes Peninsula, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force

Filed Nov. 17, 1971, Ser. No. 199,684

Int. Cl. H03h *7/10*

U.S. Cl. 307—109 **3 Claims**



An electronically controlled capacitor utilizing an analog multiplier and to obtain an effect analogous to the Miller Effect. An input signal is fed through an input resistor which is connected to a fixed capacitor which is in turn coupled to a transistor in a common base configuration. An analog multiplier is capacitively coupled to the transistor's collector which drives the input side of the fixed capacitor through an output resistor.

3,702,406

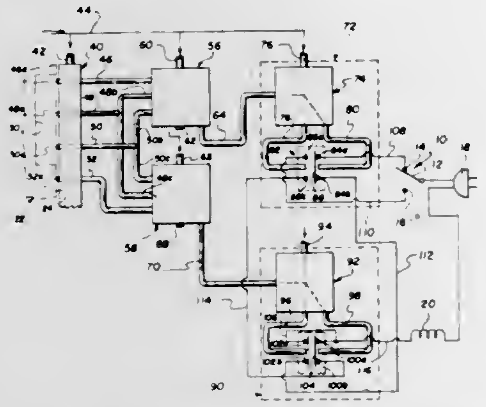
FLUID OPERATED CONTROL APPARATUS RESPONSIVE TO SENSING A PLURALITY OF MEMBERS CONTAINING ONE OF TWO CODES

Gerald J. Sukel, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 9, 1970, Ser. No. 88,033

Int. Cl. H01h *35/24;* **F15c** *1/08*

U.S. Cl. 307—144 **5 Claims**



Fluid operated apparatus for controlling the operation of a device actuator that is connectable in an electric circuit and adapted to be energized in response to sensing of the presence of a particular coding on a film cartridge or other member. Fluid operated means senses the coding on a cartridge and selectively controls the application of fluid pressure to a fluid operated switch so that the switch is opened or closed according to the coding sensed. Electrical contacts of the switch are connectable in a circuit including the device to be controlled so that the device is operated only in response to the presence of a cartridge having a particular code thereon. In a preferred embodiment disclosed the apparatus is adapted to sense two particular cartridge codes and to operate a punch used to strip film from the cartridge only when a conditioning switch on a film processor indicates that the processor is set to handle the film type that is in the cartridge.

3,702,407

A CIRCUIT FOR CONVERTING A VARIABLE FREQUENCY PULSE TRAIN INTO A RELATED ELECTRIC VOLTAGE

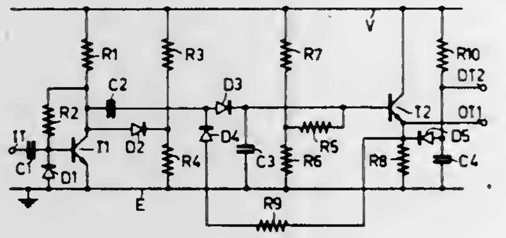
Denis Sharp, East Grinstead, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 27, 1970, Ser. No. 58,349

Claims priority, application Great Britain, July 25, 1969, 37,575/69

Int. Cl. H03k *5/20*

U.S. Cl. 307—233 **7 Claims**



A frequency-to-DC converter circuit for producing an output voltage related to the frequency of a train of input pulses. The circuit includes an improved "diode pump" circuit in which the input capacitor discharges through a diode only to a given reference voltage different from ground potential during the period between successive input pulses. The reference voltage approximates the instantaneous voltage across the circuit storage capacitor. The output voltage is preferably taken from the junction of an RC time constant circuit. The converter is especially adapted to provide a speed signal in an anti-lock brake system.

3,702,408

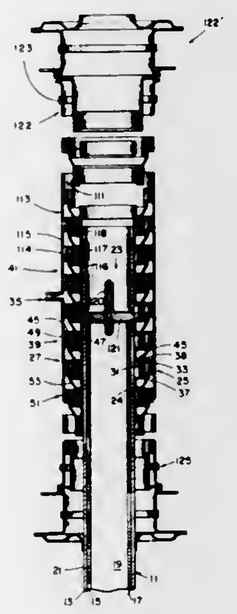
MULTI-CONVERTER THERMIONIC ENERGY MODULE

Richard W. Longsderff, Lancaster, and Robert Shirk Sheetz, Elizabethtown, both of Pa., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 3, 1970, Ser. No. 86,577

Int. Cl. H01j *45/00*

U.S. Cl. 310—4 **6 Claims**



Vacuum-cast method for dielectric bonding of refractory metals for providing an aluminum oxide electrical insulator between concentric molybdenum cylinders for forming a trilayer sandwich construction. The trilayers are employed in thermionic diodes that are stacked on a heat pipe in a series connected network in a single cesium filled envelope. Interconnecting slotted leads provide axial flexibility between the diodes in a multi-converter, thermionic energy module.

3,702,409

NEUTRON COUNTER FILLED WITH BORON TRIFLUORIDE GAS

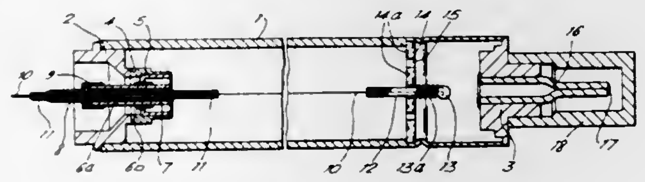
Anthony Goodings, Winfrith, and John Walgate Leake, Harwell, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed June 29, 1970, Ser. No. 50,762

Claims priority, application Great Britain, July 1, 1969, 33,290/69

Int. Cl. H01j *39/32*

U.S. Cl. 313—61 D **5 Claims**



Failure of neutron detecting chambers can be avoided if the results of fault analysis are properly analyzed. In this invention the analysis leads to a redisposition, redesign and reorientation of ceramic components to avoid or delay their deterioration during use of the chamber.

3,702,410

IMAGE PICKUP TUBE SEMICONDUCTOR TARGET SUPPORT STRUCTURE

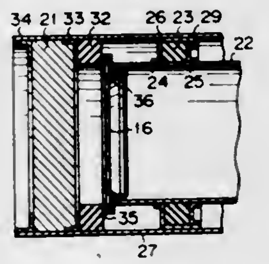
Shoichi Miyashiro, Yokohama; Shunji Shirouzu, Kawasaki, and Shigeo Tsuji, Fujisawa, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Continuation-in-part of Ser. No. 889,756, Dec. 31, 1969, abandoned. This application April 20, 1971, Ser. No. 135,710

Claims priority, application Japan, Jan. 7, 1969, 44/1181; Feb. 7, 1969, 44/8697; April 2, 1969, 44/25425

Int. Cl. H01j *31/28, 29/02, 31/38*

U.S. Cl. 313—66 **11 Claims**



An image intensifier vidicon which is divided by a semiconductor target into an image section, the inner surface of the face plate of which is coated with an electron-emissive layer and a scanning section, wherein said semi-conductor target includes a semiconductor substrate, a plurality of PN junctions formed therein, an accelerating layer formed on the electron incident side of said target, and a scanning surface which is protected from contamination by alkali metals constituting the electron-emissive layer by means of insulation rings provided in the scanning section. One of the insulation rings also set the critical spacing between the target and a mesh electrode.

3,702,411

SPARK ARRESTER

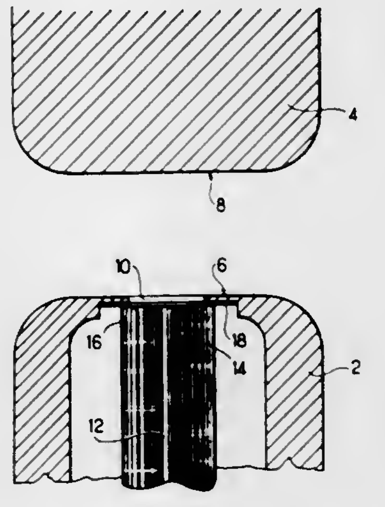
Rene Destree, Viry-Chatillon, France, assignor to Compagnie Generale D'Electricite, Paris, France

Filed Sept. 14, 1971, Ser. No. 180,298

Claims priority, application France, Sept. 16, 1970, 7033577

Int. Cl. H01j *17/30*

U.S. Cl. 313—198 **7 Claims**



The triggering electrode is butted against an opening in the cathode, against the inside face of this cathode, closing a solid dielectric sheet with an opening perforated in it. This permits, on the one hand, the precise positioning of this electrode with respect to the cathode, with a small interval, 12 microns, for example, and on the other hand, the lowering of the voltage necessary to provide the pulse for the triggering. The invention applies particularly to rapid spark arresters where the triggering voltage is less than 2 kV.

3,702,412

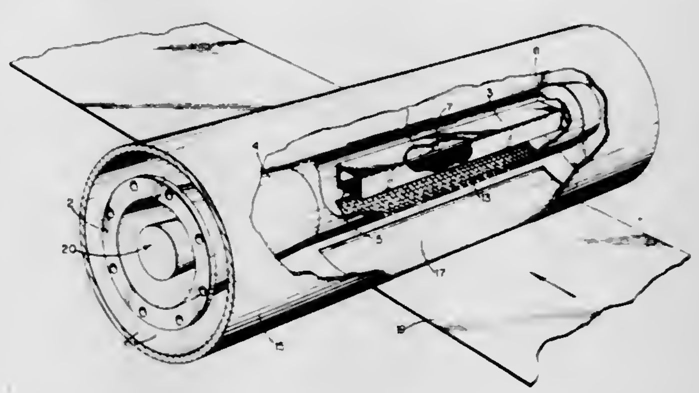
APPARATUS FOR AND METHOD OF PRODUCING AN ENERGETIC ELECTRON CURTAIN

Bertram S. Quintal, Peabody, Mass., assignor to Energy Sciences, Inc., Burlington, Mass.

Filed June 16, 1971, Ser. No. 153,769

Int. Cl. H01j *33/00, 33/04, 1/46*

U.S. Cl. 313—299 **7 Claims**



This disclosure deals with the shaping of a longitudinal space-charge-limited line of electrons into a substantially uniform electron density curtain, accelerating the same along field lines that expand the curtain, and then passing the expanded curtain through a longitudinal window for irradiation purposes and the like.

3,702,413

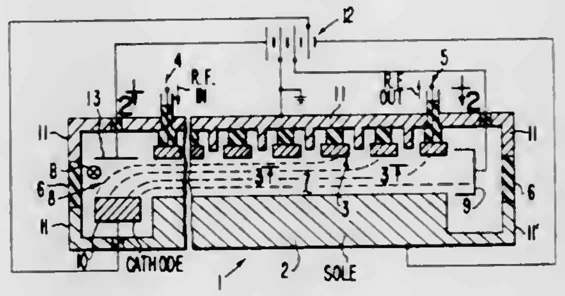
SHIELDED MEANDER LINE SLOW WAVE CIRCUIT AND TUBES USING SAME

Bernard S. Glance, Berkely Heights, N.J., assignor to Varian Associates

Filed Jan. 26, 1968, Ser. No. 700,897

Int. Cl. H01j *25/34*

U.S. Cl. 315—3.5 **5 Claims**



A crossed field microwave amplifier tube is disclosed. The amplifier employs a meander line slow wave circuit arranged for interaction with a stream of electrons to amplify signal radio frequency wave energy on the circuit to produce an amplified output signal. The meander line slow wave circuit includes a zig-zag shaped conductor disposed over a ground plane member to define a meander line slow wave circuit. An insulative structure is disposed between the zig-zag conductor and the ground plane for insulatively supporting the zig-zag conductor over the ground plane. A conductive shield structure is provided which projects from the ground plane structure into the space between adjacent zig-zag portions of the zig-zag shaped conductor to decrease the capacitance between adjacent zig-zag portions of the meander line, thereby shaping the dispersion characteristic of the shielded meander line circuit to provide nearly constant phase velocity for r.f. wave energy within an ultra wide passband of the circuit. More particularly, the phase velocity within the passband of the circuit is constant to within 1 percent for 1 octave of bandwidth and constant to 1.5 percent for a 2 octave bandwidth. In a preferred embodiment, the insulative support structure is recessed into the ground plane structure to reduce the shunt capacity of the meander line to the dielectric support structure, thereby reducing the insertion loss of the circuit. In addition the conductive shield structure serves to shield the insulative support structure from sputtered cathode materials which would otherwise tend to be deposited on and to short out the insulative structure.

3,702,414

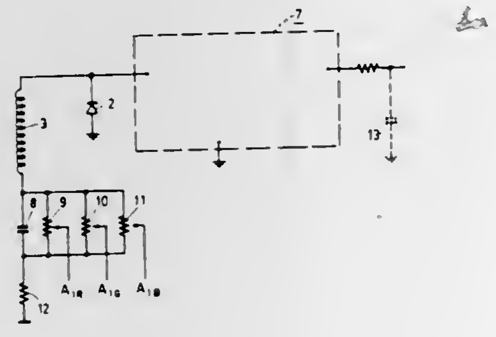
CIRCUIT ARRANGEMENT FOR SUPPLYING EHT TO THE ACCELERATOR ANODE OF A PICTURE DISPLAY TUBE

Peter Johannes Hubertus Janssen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 15, 1971, Ser. No. 163,013

Int. Cl. H01j *29/70*

U.S. Cl. 315—29 **5 Claims**



A circuit has a horizontal output transformer with an output winding. A voltage multiplier is connected to the winding to provide the voltage to a CRT ultor electrode. In addition, a diode has its cathode connected to the junction of the multiplier and the winding and its anode grounded. This supplies the voltages for the acceleration anodes without using a large capacitor in the multiplier and reduces the current drain from the winding.

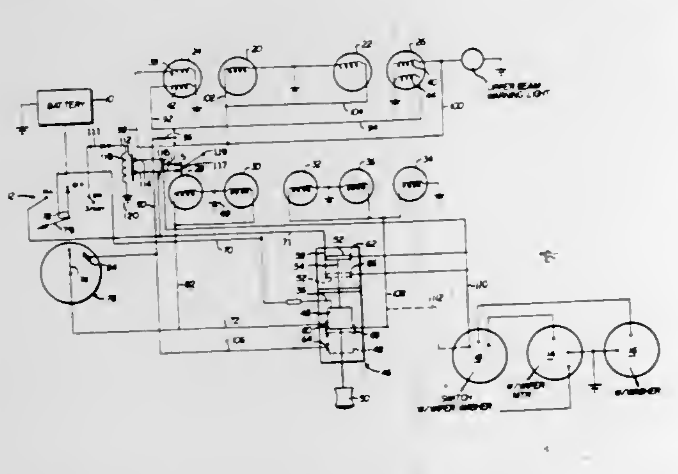
3,702,415

SAFETY AUTOMOTIVE LIGHTING CIRCUITS

Rudd Schultz, 611 S. E. 18th Avenue, Pompano Beach, Fla. Continuation-in-part of Ser. No. 33,645, May 1, 1970, abandoned. This application April 28, 1971, Ser. No. 138,127

Int. Cl. B60g *1/02*

U.S. Cl. 315—82 **11 Claims**



An improved circuit in an automotive vehicle associated with the light switch and the ignition switch of the vehicle to turn on the vehicle's headlamps along with or instead of its parking lamps when the light switch is in its parking lamp activating position and the vehicle is in an operating condition.

3,702,416

ION SOURCE HAVING A UNIFORM RADIAL DENSITY

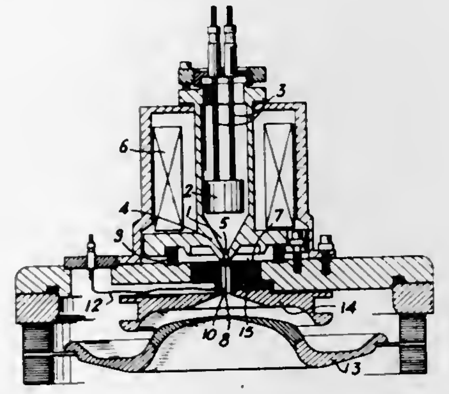
Lucien Bex, 8, residence des Fougeres, 78 Les Clayes-sour-Bois; Jean Faure, Residence Les Amazones, 78 Les Essarts-le-Roi, and Roger Vienet, 4 avenue des Roches, 91 Gif-Sur-Yvette, all of France

Filed March 27, 1970, Ser. No. 23,184

Claims priority, application France, April 4, 1969, 6910569

Int. Cl. H01j *7/24*

U.S. Cl. 315—111 **4 Claims**



The source comprises an ionization chamber into which the gas to be ionized is introduced, a cathode placed at the center of an intermediate electrode provided within an orifice for the passage of electrons, an anode provided with a hole for the passage of ions, a plasma-expansion control electrode which is electrically insulated from the anode and brought to a negative potential with respect to the anode potential, and an ion extraction electrode.

3,702,417

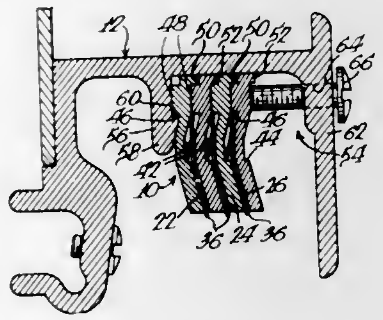
STATIC ELIMINATOR

Kenneth W. Bower, Des Plaines, and Lewis F. Jennings, McHenry, both of Ill., assignors to Varco Incorporated

Filed Oct. 15, 1971, Ser. No. 189,639

Int. Cl. H05f *3/04;* **H01t** *19/04*

U.S. Cl. 317—2 F **11 Claims**



A static electricity neutralizer preferably for use in business machines wherein webs of material, such as paper, are fed therethrough characterized by a construction that eliminates undesired secondary emitting points and wherein insulating members and electrically conducting elements are stacked in a sandwich type relation such that the number of layers in the sandwich can be varied as desired. Both high voltage and grounding elements are provided with discharge points.

3,702,418

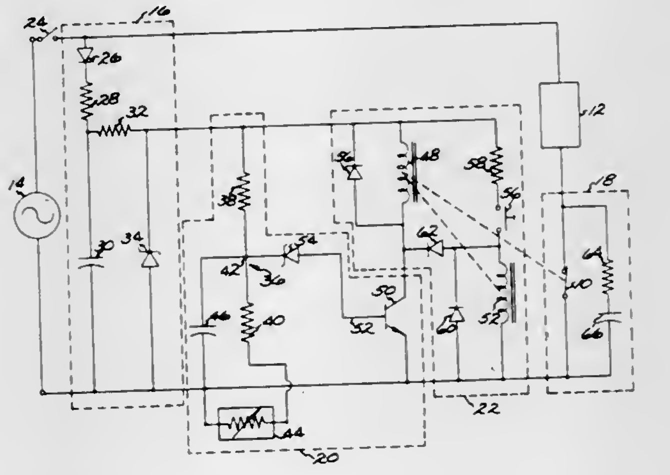
PROTECTION SYSTEM WITH MANUAL RESET MEANS OPERABLE ONLY ON CLEARING OF THE FAULT

Robert E. Obenhaus, South Easton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 30, 1971, Ser. No. 185,103

Int. Cl. H02h *5/04*

U.S. Cl. 317—13 A **16 Claims**



A protection system is provided for effecting disruption of the power being supplied to a load responsive to a sensed variation in the operation of a system being protected and for preventing re-application of power to the load until the fault dissipates. The system includes a first selectively operable switch means for connecting and disconnecting the load from a source of power and a switch control means operatively connected to the switch means for effecting opening and closing thereof so as to effect removal and re-application of power to the load, respectively responsive to energization and de-energization thereof. The switch control means remains in an energized condition subsequent to energization due to the establishment of a magnetic bias until neutralization of the magnetic bias is effected. A selectively energizable current switch is coupled to the switch control means for controlling its operation, while means responsive to the operation of the system being protected are coupled to the current switch for controlling conduction thereof responsive to predetermined variations in the operation of the system being protected. In addition, selectively operable means are coupled to the switch control means for effecting neutralization of the magnetic bias only when the current switch returns to a non-conductive condition.

3,702,419

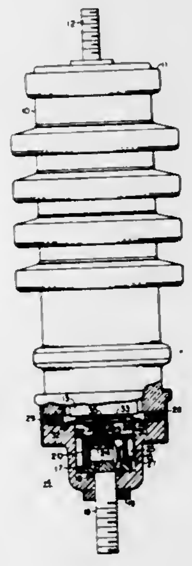
LIGHTNING ARRESTER WITH PRESSURE RELIEF MEANS

Charles H. Carothers, and Philip W. Bogner, Bloomington, both of Ind., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 28, 1971, Ser. No. 184,471

Int. Cl. H02h *1/04, 9/06*

U.S. Cl. 317—61 **9 Claims**



A lightning arrester with means for relieving internal pressure by venting the housing in case of failure of the arrester. The housing is closed at the end by a thin sealing plate and a piercing member is disposed inside the housing adjacent the plate. An explosive disconnector device is provided on the outside of the housing, and in case of failure of the arrester the disconnector operates and drives the plate onto the piercing member to puncture the plate and relieve internal pressure in the housing.

3,702,420

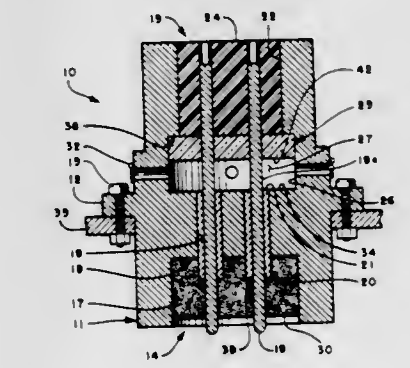
ELECTRICAL SURGE DIVERTING CONNECTOR

James A. Cooper, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Dec. 21, 1971, Ser. No. 210,370

Int. Cl. H02h *9/04*

U.S. Cl. 317—61 **11 Claims**



An electrical connector which provides lightning protection by facilitating arcing of electrical surges over the end of an insulator and cooperating conductive surface employing dielectric to stimulate arc-over and thus substantially reduce breakdown voltage.

3,702,421

CHOKE UNIT

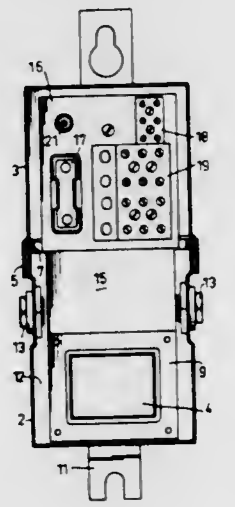
Andries Theodorus Grul, Northryde, Australia, assignor to Ferguson Transformers Pty. Limited, Chatswood, Australia

Filed Oct. 5, 1971, Ser. No. 186,286

Claims priority, application Australia, Oct. 6, 1970, 2764/70

Int. Cl. H02b *1/18;* **H01f** *15/02*

U.S. Cl. 317—99 **9 Claims**

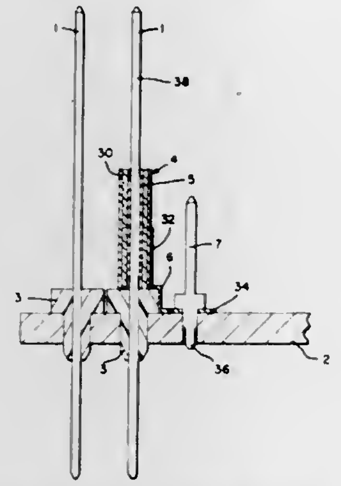


An electric choke is embedded in a sealing compound filling part of a metal housing acting as a heat sink. The core of the choke has a support member fixed therein, which extends beyond the sealing compound and supports ancillary equipment.

3,702,422
FILTERS FOR INTERCONNECTION SYSTEMS

Ferdinand William Schor, Altadena, Calif., assignor to AMP Incorporated, Harrisburg, Pa.

Filed June 10, 1971, Ser. No. 151,788
Int. Cl. H05k *1/04*
U.S. Cl. 317—101 CC **9 Claims**

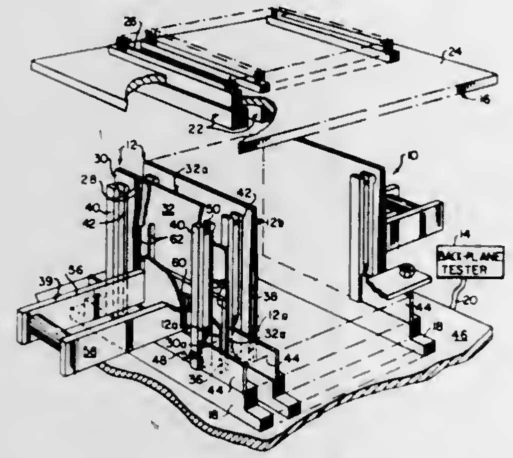


An interconnection system configuration which is used between a printed circuit board and wiring board circuitry and which uses low-pass filters to reduce high frequency interference. The filters are positioned over terminal posts and uniquely grounded to the panel of an interconnection system.

3,702,423
LOW-FORCE PRINTED CIRCUIT MALE CONNECTION APPARATUS

Walter Kern, Cohasset, Mass., assignor to Teradyne, Inc., Boston, Mass.

Filed Nov. 9, 1971, Ser. No. 196,903
Int. Cl. H05k *1/00*
U.S. Cl. 317—101 D **11 Claims**



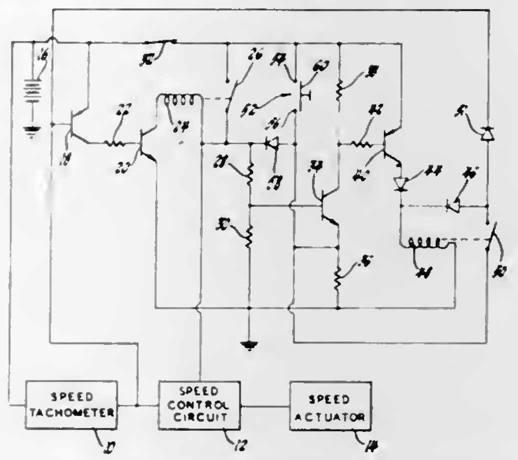
Printed circuit apparatus has the circuit board structure which carries the edge contacts constructed with two sheet members in register with each other and having a total thickness less than standard, and with a wedge member between the sheet members and movable to separate them, after plugging them into an edge-receiving receptacle, to the thickness standard for the receptacle.

3,702,424
ELECTRONIC PUSH BUTTON SEQUENCER

Ronald L. Colling, Millington, and Myron U. Trenne, Flint, both of Mich., assignors to General Electric Corporation, Detroit, Mich.

Filed May 20, 1971, Ser. No. 145,274
Int. Cl. H01h *47/04*
U.S. Cl. 317—140 **2 Claims**

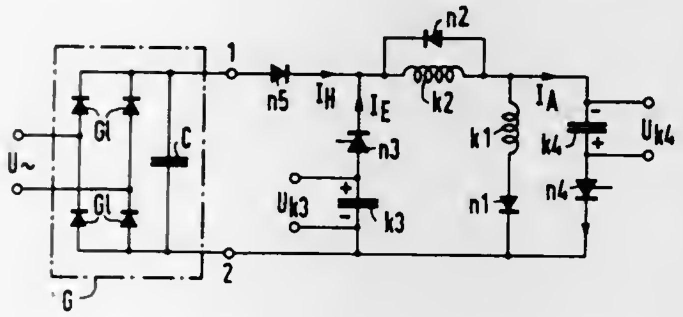
A push button sequencer in which a latching relay is energized and latched, in response to the actuation of a push button, to connect a load to a power source. Upon the release of the push button, a control circuit senses the energization of the latching relay and the release of the push button to energize a second relay which connects the output of the push button to a circuit for deenergizing the latching relay. A subsequent actuation of the push button supplies a signal to the circuit to deenergize the latching relay. The control circuit senses the release of the push button and the deenergization of the latching relay to deenergize the second relay. Upon the deenergization of the latching relay, the load is disconnected from the power source and the circuit is returned to its original condition such that the next actuation of the push button will again energize and latch the latching relay to supply power to the load.



3,702,425
CIRCUIT FOR RAPID EXCITATION AND DE-EXCITATION OF AN ELECTROMAGNETIC SWITCH

Manfred Hoffmann, Erlangen, and Peter Schulze, Uttenreuth, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Dec. 13, 1971, Ser. No. 207,004
Claims priority, application Germany, Dec. 18, 1970, P 20 62 387.4
Int. Cl. H01h *47/22*
U.S. Cl. 317—151 **10 Claims**

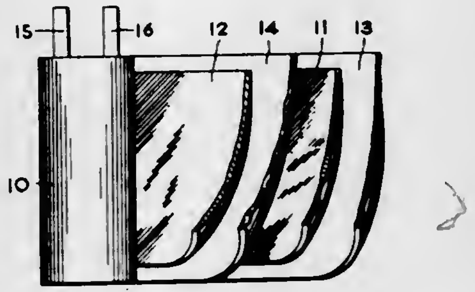


For rapid excitation and de-excitation of electromagnetic switches, such as relays, contactors, magnetic valves, and the like, the excitation winding of an electromagnetic switch is passed by a steady holding direct current via a choke connected in series therewith. The holding current is adequate for holding the armature when the armature is pulled up, but is inadequate for pulling up the armature from its rest position. A first series circuit arrangement connected in parallel with the series connection of the excitation winding and the choke comprises a first controllable semiconductor switch and a first capacitor. A second series circuit arrangement connected in parallel with the excitation winding comprises a second controllable semiconductor switch and a second capacitor. The first series circuit arrangement produces a pulse-like current amplification of the holding current in the excitation winding when its semiconductor switch is controlled. The second series circuit arrangement produces a pulse-like current reduction of the holding current in the excitation winding when its semiconductor switch is controlled.

3,702,426
DIMETHYLOLPROPIONIC ACID BASED ELECTROLYTES FOR ELECTRICAL CAPACITORS

Sidney D. Ross; Franz S. Dunkl, both of Williamstown, and Manuel Finkelstein, North Adams, all of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Dec. 3, 1971, Ser. No. 204,481
Int. Cl. H01g *9/00*
U.S. Cl. 317—230 **9 Claims**

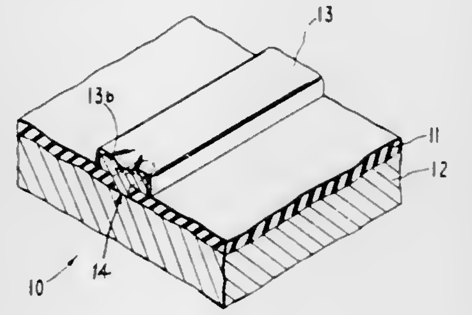


An electrolytic capacitor containing new electrolyte systems comprising a solvent containing a compound derived from α, α-dimethylolpropionic acid:

3,702,427
ELECTROMIGRATION RESISTANT METALLIZATION FOR INTEGRATED CIRCUITS, STRUCTURE AND PROCESS

Arthur J. Learn, Cupertino; William H. Shepherd, and Conrad J. Dellioca, both of Palo Alto, all of Calif., assignors to Fairchild Camera Instrument Corporation, Mountain View, Calif.

Filed Feb. 22, 1971, Ser. No. 117,477
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R **6 Claims**



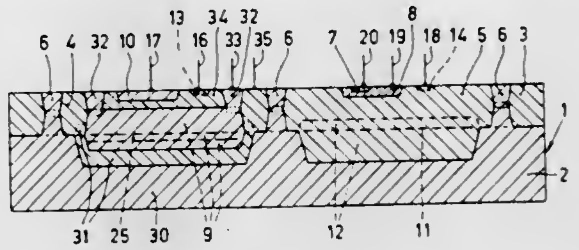
The exposed surfaces of metal leads formed on an integrated circuit wafer are anodized to reduce electromigration.

3,702,428
MONOLITHIC IC WITH COMPLEMENTARY TRANSISTORS AND PLURAL BURIED LAYERS

Albert Schmitz; Cornelis Mulder, and Arie Slob, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 18, 1967, Ser. No. 676,235
Claims priority, application Netherlands, Oct. 21, 1966, 6614858
Int. Cl. H01l *19/00*
U.S. Cl. 317—235 R **14 Claims**

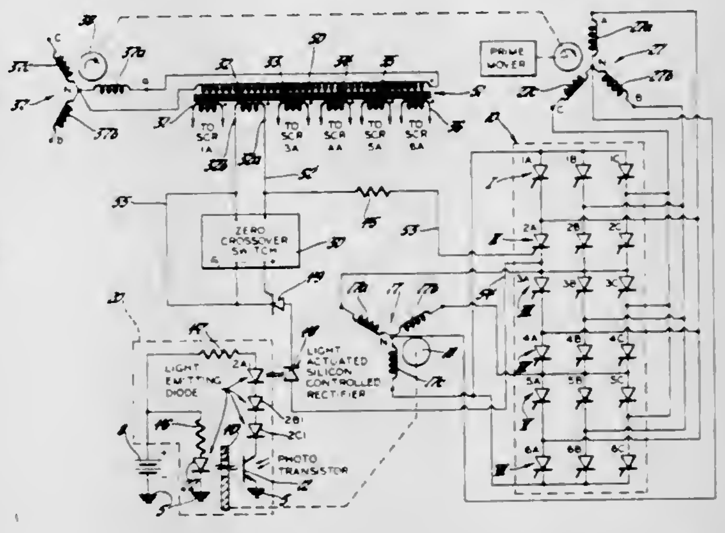
A method of making, and the product resulting, an integrated monolithic circuit having complementary transistors in islands formed in an epitaxial layer of opposite conductivity on a one-type substrate. One transistor, usually the NPN, is conventional. The other transistor, PNP, uses a diffused emitter, a base region formed by the island material, and a collector comprising a buried layer formed in the epitaxial layer by outdiffusion from the substrate. To isolate the collector, a second buried layer can be provided forming part of a tub-shaped isolation region surrounding the collector.



3,702,429
CYCLOCONVERTER SILICON CONTROLLED RECTIFIER GATE-CATHODE CIRCUIT SIGNAL AND POWER SYSTEM

Elbert M. Sawyer, Torrance, Calif.; Joseph M. Brown; Curtis D. Munden, both of Anderson, Ind., and Kenneth E. Giles, Corvallis, Oreg., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 30, 1971, Ser. No. 203,276
Int. Cl. H02p *5/40*
U.S. Cl. 318—227 **5 Claims**



A system for producing properly timed gate signals and gate-cathode power for the silicon controlled rectifiers of a cycloconverter network, through which the phase windings of a three-phase alternating current motor are cyclically energized from an alternating current supply potential alternator, having two groups of three silicon controlled rectifiers for each motor phase winding. The properly timed gate signals are produced by a rotor position sensor including six circumferentially arranged phototransistors, each of which corresponds to a group of cycloconverter silicon controlled rectifiers, an axially aligned and spaced light-emitting diode corresponding to each phototransistor, a shutter disposed therebetween and rotated by the motor rotor of a configuration such that pairs of phototransistors are alternately exposed to and masked from the corresponding light-emitting diodes and three gate signal light-emitting diodes connected in series with each phototransistor across a direct current potential source. When any pair of phototransistors is exposed to the corresponding light-emitting diodes, a circuit is completed for the three gate signal light-emitting diodes in series with each. Each gate signal light-emitting diode produces a gate signal for a respective silicon controlled rectifier of the group to which the phototransistor with which it is connected in series corresponds. The gate-cathode circuit of each cycloconverter silicon controlled rectifier of each group is transformer coupled to a different phase output winding of a gate power three-phase alternating current alternator, mechanically coupled to and operated by the alternating current supply potential alternator, which produces a gate-cathode power potential which leads the alternating current supply potential alternator potential by a selected electrical angle. Included in each cycloconverter silicon controlled rectifier gate-cathode circuit are a light actuated silicon controlled rectifier, optically coupled to a corresponding gate signal light-emitting diode, and a gate-cathode circuit silicon controlled rectifier which are triggered conductive, respectively, by the light emitted by the corresponding gate signal light-emitting diode and the output signal of a zero crossover switch in the same gate-cathode circuit to complete the gate-cathode circuit for the corresponding cycloconverter silicon controlled rectifier.

3,702,430
CONTROL DEVICE FOR ELECTROMECHANICALLY OPERATED CLOSURE PANELS

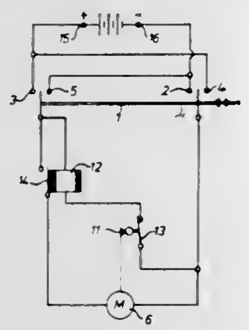
Hans Knetsch, Penzberg, Germany, assignor to Webasto-Werke W. Baier KG, Stockdorf, Germany

Filed Dec. 20, 1971, Ser. No. 209,613

Claims priority, application Germany, Jan. 5, 1971, P 21 00 336.1

Int. Cl. G05d *3/00*; **H02p** *3/06*

U.S. Cl. 318—468 **8 Claims**



A control device for a motor-driven closure panel, for instance an automobile sunroof panel whose closed position is an intermediate position between an open, retracted position and another open, pivoted position, the circuitry for the reversible motor including an impulse relay operating a control switch in one of the two motor connections, the relay coil being connected in parallel to the motor and between the control switch and the pole reversing switch, a position-responsive switch cutting off the relay circuit whenever the panel moves out of its closed position and energizing the impulse relay whenever the panel reaches the closed position.

3,702,431
CONDITION RESPONSIVE MODULATING MOTOR CONTROL SYSTEM

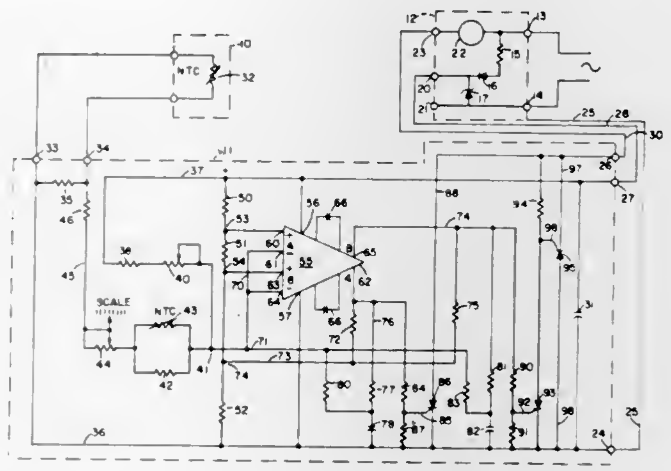
Balthasar Hubert Pinckaers, Edina, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Dec. 3, 1971, Ser. No. 204,567

Int. Cl. G05b *11/01*

U.S. Cl. 318—471 **6 Claims**

A condition responsive circuit, disclosed as including two temperature responsive elements, is adapted to be connected to a pair of identical amplifiers which are biased to different operating levels. The amplifiers each have outputs that are connected to different silicon controlled rectifiers that are in turn connected in an inverse parallel relationship. Each of the pair of amplifiers further includes a positive feedback circuit to its respective input, and a time delayed negative feedback circuit connected to its respective input. An electric motor is connected in series with an alternating current supply and a pair of silicon controlled rectifiers so that the motor can be controlled. The motor is of a type that operates in a first direction when energized by a full-wave alternating potential to load a resilient means, such as a spring. The resilient means or spring is capable of returning the motor and load in the opposite direction when energy is removed from the motor. The motor is capable of being stalled and maintained in any intermediate position by the application of unidirectional half-wave potential.



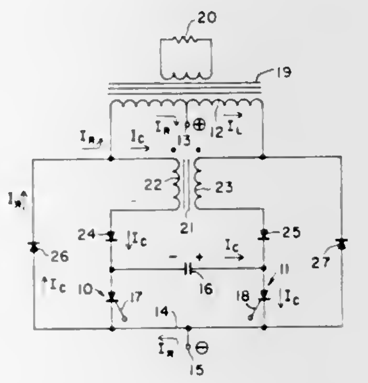
3,702,432
INVERTERS USING CONTROLLED SEMICONDUCTOR RECTIFIERS

John W. Wurst, Dover, and Robert M. Kanen, Long Valley, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed Aug. 21, 1969, Ser. No. 851,831

Int. Cl. H02m *7/52*

U.S. Cl. 321—45 R **1 Claim**



A parallel D.C. to A.C. inverter uses triggered silicon controlled rectifiers (SCR's) in a power current flow circuit especially adapted to supply variable frequency currents to an induction motor load over a wide range of frequency, voltage and load power. A bifilar choke is used to prolong the discharge time of the commutating capacitor and to prevent high peak currents to the load during commutation. A first pair of diodes prevents discharge of the capacitor prior to commutation. A second pair of diodes provides alternate feedback paths for the return of energy stored in the magnetic circuit to the power supply immediately after commutation.

3,702,433
ALTERNATOR REGULATOR CIRCUIT

Forbes D. Gilchrist, Chicago, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

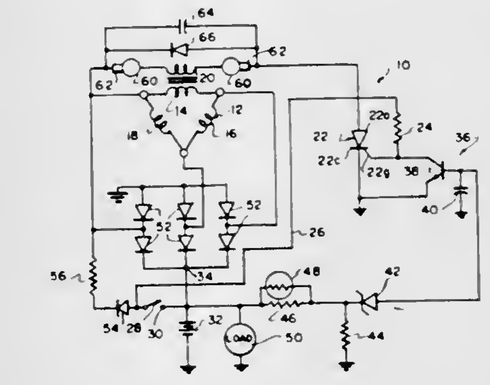
Filed Feb. 25, 1971, Ser. No. 118,911

Int. Cl. H02p *9/30*

U.S. Cl. 322—28 **5 Claims**

An alternator regulator is arranged to control field excitation current when receiving such excitation current from one

of the three phase stator windings which form the output of the alternator. Starting current to the excitation field winding is supplied through a resistor, and after initiation of operation of the alternator, continued excitation of the field winding is achieved by the output of the alternator itself. A silicon controlled rectifier is connected in series with the excitation field winding to control current therethrough and the gate current to the silicon controlled rectifier is supplied by a direct connection to the alternator output or a battery supply connected thereto.



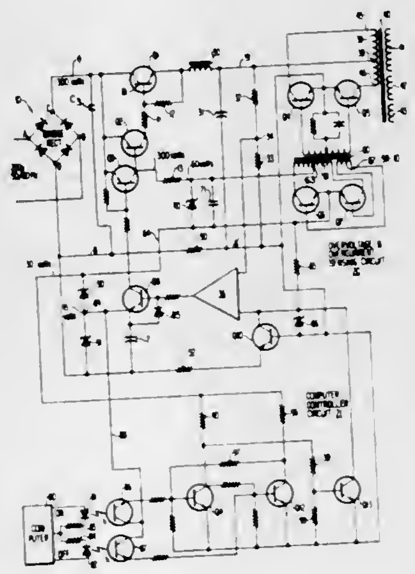
3,702,434
POWER SUPPLY SYSTEM AND CONTROL CIRCUITS THEREFOR

William H. Ryan, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed Dec. 18, 1970, Ser. No. 99,497

Int. Cl. G05f *1/44*

U.S. Cl. 323—20 **4 Claims**



There is disclosed a regulated power supply system wherein an alternating current supply voltage is converted to a direct current voltage, which is regulated and applied to a converter, the converter including a pair of switching transistors for switching current through a linear transformer core and a further pair of switching transistors connected as a push-pull saturable reactor oscillator or inverter for supplying switching potentials to the first pair of transistors. A zener reference diode is used to sense over-voltage conditions to a load and automatically adjust a switching transistor in the regulator to adjust the voltage to the load. In accordance with the invention, one or more switching devices are connected across the zener diode, one of which is operated in accordance with signals from a computer or other low level signal source so as to turn on and turn off the power supply and the other of which is connected to a current sensing resistor for shunting the reference zener diode on current overloads. A further feature of the invention is in the overall system of conversion wherein power for the saturable reactor inverter and other operating potentials for the regulating circuit are derived from the regulator circuit per se, thereby improving the efficiency of the system.

3,702,435
ELECTRIC POWER CONTROL DEVICE

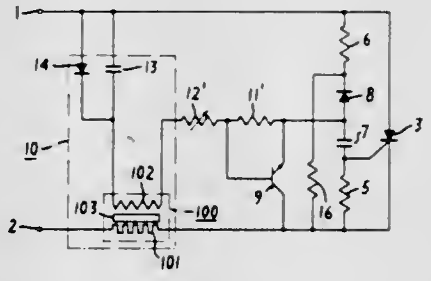
Yoshitaka Endo; Katsumi Tomiyama, both of Kamakura, and Yasushi Takanashi, Nitta-gun, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 27, 1971, Ser. No. 110,229

Claims priority, application Japan, Jan. 31, 1970, 45/8849

Int. Cl. G05f *1/44*; **H03k** *17/00*

U.S. Cl. 323—22 SC **2 Claims**



The disclosed electric power control device utilizes a semiconductor control device and a capacitor. The capacitor is so arranged to be charged during a voltage in the reverse direction applied to the semiconductor control device, and to discharge through a control electrode of the control device when the forward voltage applied to the semiconductor control device is zero or when the voltage exhibits reverse polarity, thereby to switch the semiconductor control device at a zero crossing point of the a.c. voltage from the source.

3,702,436
METHOD AND APPARATUS FOR DATA SIGNAL SPECTRUM ANALYSIS

Billy G. Pollard, San Diego, Calif., assignor to Spectral Dynamics Corporation of San Diego

Filed Oct. 26, 1971, Ser. No. 192,492

U.S. Cl. 324—77A **19 Claims**

The processing of a data signal for analysis by using a time scale converter that changes the time base or function of the data signal supplied to a single band filter that filters frequencies of interest. The changing of the time base in multiple steps and in successive time intervals, presents different frequencies of the data signal to the filter in the filters constant narrow band. The process and apparatus uses a recirculating memory with a time scale that is changed to allow a programmed change in the speed of recirculation. This allows a single band filter or a single degree of freedom filter to in effect scan the range of frequencies of the complex data input signal, even though the signal is transient and not reoccuring.

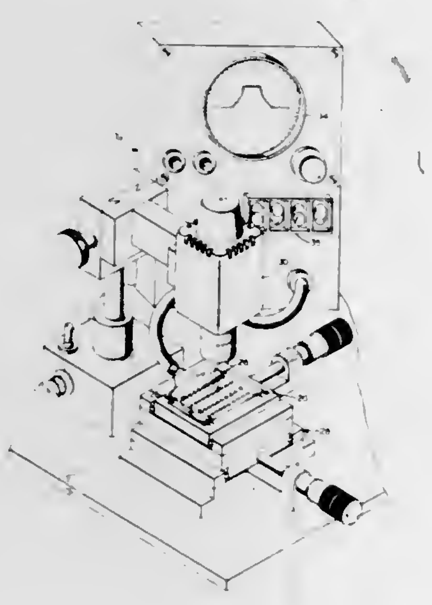
3,702,437
DIAGNOSTIC AND REPAIR SYSTEM FOR SEMICONDUCTORS

John W. McGrath, Allentown, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed June 1, 1970, Ser. No. 42,176

Int. Cl. G01r *31/22, 31/02*

U.S. Cl. 324—158 F **11 Claims**



A system is provided for diagnosing and repairing electronic assemblies which include a plurality of semiconductor devices interconnected in parallel, wherein at least one of the devices is faulty. Radiant energy is directed onto each of the devices successively and the response of each device to the radiant energy is noted. When a device causes a response dissimilar from the others it is identified as a faulty device and replaced.

Alternatively, disturbing energy is transferred to the devices from a remote source by capacitive or inductive coupling through electric and magnetic fields respectively.

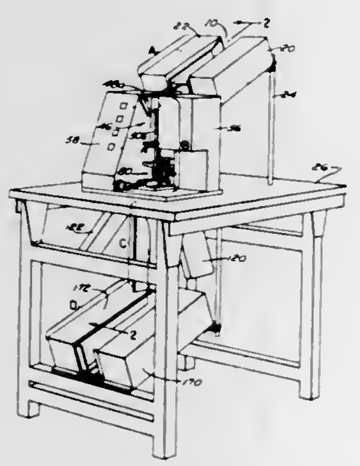
3,702,438
DIODE TESTER

Everett N. Cole, Jr., Tewksbury, Mass., assignor to Consolidated Design, Inc., Lowell, Mass.

Filed Dec. 23, 1969, Ser. No. 887,711

Int. Cl. G01r *31/22;* **B65g** *11/20*

U.S. Cl. 324—158 F **16 Claims**



A diode handler magnetically orients diodes fed to it in random orientation, supplies them one at a time to a test station, and stacks them, after testing, with their anodes pointed in the same direction.

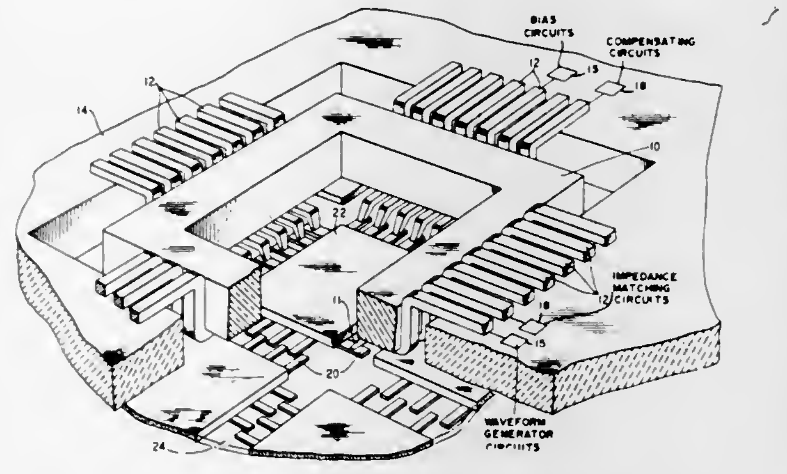
3,702,439
LOW IMPEDANCE FIXED POINT TEST PROBE

Bruce Hamilton McGahey, South Plainfield, and John Wesley West, Millington, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 12, 1970, Ser. No. 63,232

Int. Cl. G01r *31/22, 31/02*

U.S. Cl. 324—158 P **4 Claims**



A test probe includes a picture frame insulator support member on which relatively short cantilever beam-like members are mounted. One end of each of the cantilever beam-like members is used as a probe to contact a beam lead or bonding pad of an integrated circuit chip which is part of a semiconductor wafer. The probe's geometry, the material used for its construction, and the close proximity of the insulator support member to the integrated circuits to be tested all contribute to the low impedance of the probe and the sliding contact-type action which occurs during the probing operation.

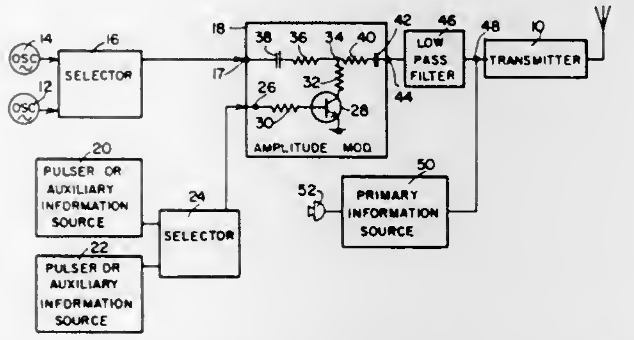
3,702,440
SELECTIVE CALLING SYSTEM PROVIDING AN INCREASED NUMBER OF CALLING CODES OR AUXILIARY INFORMATION TRANSFER

George G. Moore, Chicago, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 16, 1970, Ser. No. 89,867

Int. Cl. H04b *1/16*

U.S. Cl. 325—55 **15 Claims**


OSC
OSC
SELECTOR
AMPLITUDE MOD
LOW PASS FILTER
TRANSMITTER
PULSER OR AUXILIARY INFORMATION SOURCE
PULSER OR AUXILIARY INFORMATION SOURCE
SELECTOR
PRIMARY INFORMATION SOURCE

The selective calling system includes a transmitter having first and second signal generators providing sinusoidal and rectangular signals which are combined to form a modulated calling signal. Each receiver of the system includes a first demodulator which demodulates the modulated calling signal and a second demodulator which demodulates the rectangular signal. A frequency selective device connects the first demodulator to a first input of an AND gate and a repetition rate selective device connects the second demodulator to a second input of the AND gate. If the demodulated frequency and repetition rate are within the passbands of the devices, the AND gate provides a turn-on signal which allows primary information to be reproduced by the receiver. The system can be modified so that auxiliary information is transferred to the receivers by the calling signal.

3,702,441
FREQUENCY SYNTHESIZING SYSTEM

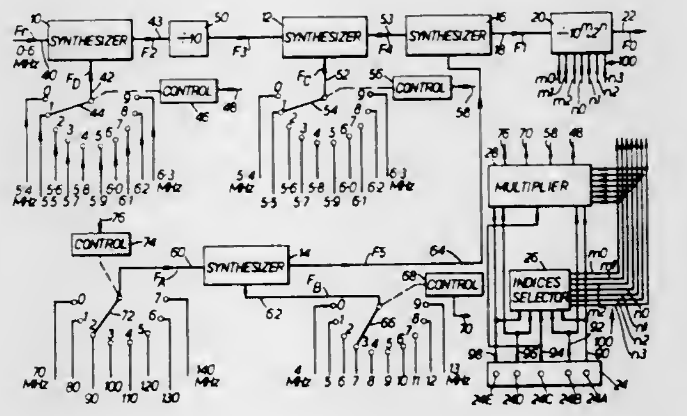
Keith R. Thrower, Bracknell, England, assignor to Racal Instruments Limited, Windsor, Berkshire, England

Filed Sept. 30, 1971, Ser. No. 185,261

Claims priority, application Great Britain, Oct. 2, 1970, 46,866/70

Int. Cl. H03b *19/00*

U.S. Cl. 328—14 **10 Claims**



A frequency synthesizing system includes frequency synthesizing means operative to produce an adjustable intermediate frequency, frequency dividing means for dividing the intermediate frequency by an adjustable division factor to produce an output frequency, setting means operable to set up the desired value of the output frequency, and control means automatically responsive to the setting means to adjust the synthesizing means and the dividing means in dependence on the desired value of the output frequency, such that the value of the intermediate frequency produced by the synthesizing means produces, when divided by the division factor of the dividing means, the desired output frequency.

3,702,442
DETECTION CIRCUIT FOR FREQUENCY-MODULATED SIGNALS

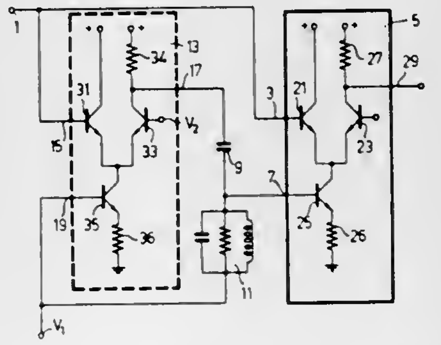
Peter Johannes Hubertus Janssen, and Kian Kie Ong, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 19, 1971, Ser. No. 116,923

Claims priority, application Netherlands, March 7, 1970, 7003280

Int. Cl. H03d *3/00*

U.S. Cl. 329—103 **6 Claims**



Interfering phase modulation of the current passage through an FM- quadrature demodulator as a result of amplitude modulation of the input signal is compensated by using a circuit which converts amplitude modulation of the input signal into phase modulation corresponding to the interfering phase modulation.

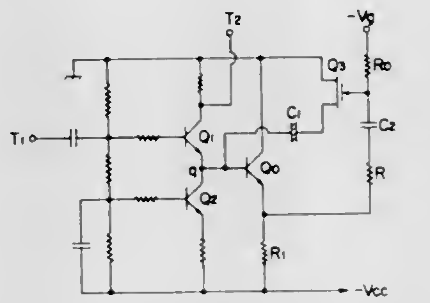
3,702,443
AUDIO-FREQUENCY SIGNAL LEVEL CONTROL CIRCUIT

Takatoshi Okumura, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki, Kaisha, Hamamatsu-shi, Japan

Filed Jan. 27, 1971, Ser. No. 110,041

Int. Cl. H03g *3/30*

U.S. Cl. 330—28 **5 Claims**



In an audio signal level control circuit for use in an audio system such as an electronic musical instrument, which comprises an emitter-grounded type transistor amplifier, an input signal being applied to the base and an output signal being taken out from the collector, a constant-current supply circuit including another transistor and being connected in series in the emitter path of the amplifier, and a field effect transistor (FET) connected between the emitter of the amplifier and the ground from an AC viewpoint as a variable resistance element whose resistance value is controlled by a level control voltage applied to the gate of the FET; the improvement comprises a unidirectional amplifying circuit such as an emitter follower type transistor amplifier, the base of which being connected to the non-grounded side of the FET and the emitter being connected to the gate of the FET to provide a negative feedback function of the FET operation, thereby reducing the distortion in the output signal of the first-mentioned amplifier and eliminating the generation of noises due to rough variation of the control voltage.

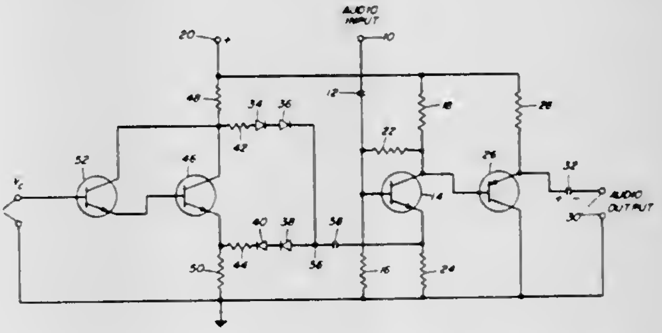
3,702,444
VOLTAGE-CONTROLLED VARIABLE GAIN AMPLIFIER

Thomas P. Owen, New York, N.Y., assignor to Columbia Broadcasting System, Inc.

Filed March 19, 1971, Ser. No. 125,994

Int. Cl. H03g *3/30*

U.S. Cl. 330—28 **2 Claims**



A transistorized voltage-controlled variable-gain audio amplifier including a transistor connected as a common-emitter amplifier, and a control circuit coupled to the emitter of the amplifying transistor and operative in response to a direct control signal to vary the impedance at the emitter without changing the voltage thereat. The control circuit includes a second transistor having matched collector and emitter resistors connected to a source of energizing potential and to ground respectively, and a branch circuit including at least two forward-biased semi-conductor diodes connected in series between the collector and emitter of the transistor. The junction between the diodes is connected through a capacitor to the emitter of the amplifying transistor thereby to effectively connect the impedance of the branch circuit in parallel with the emitter resistor of the amplifying stage. A direct control voltage applied to the base of the control transistor varies the current through the diodes to vary their impedance, and consequently the impedance at the emitter of the amplifying transistor, without changing the voltage at the emitter, to thereby vary the gain of the amplifying stage.

3,702,445
MICROSTRIP RING-SHAPED RESONATORS AND MICROWAVE GENERATORS USING THE SAME

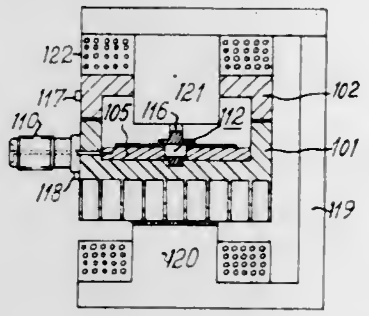
Gerard E. Forterre, Colombes, France, assignor to Lignes Telegraphiques et Telephoniques, Paris, France

Filed Oct. 18, 1971, Ser. No. 189,946

Claims priority, application France, Nov. 6, 1970, 7040113; Nov. 6, 1970, 7040114

Int. Cl. H03b *7/06*

U.S. Cl. 331—107 G **5 Claims**



A microwave resonator comprising an insulating substrate plate with a metallized coating entirely covering one of its faces and a metallized ring on its other face, and a microstrip transmission line on the same plate capacitively coupled with said ring. Microwave generators using such a resonator for determining their working frequency and having a Gunn diode located in the central hole of the ring are also described. The substrate plate can be made of a non-magnetic material or, if a variable frequency is desired, of a magnetic material adjustably polarized by D.C. field producing means.

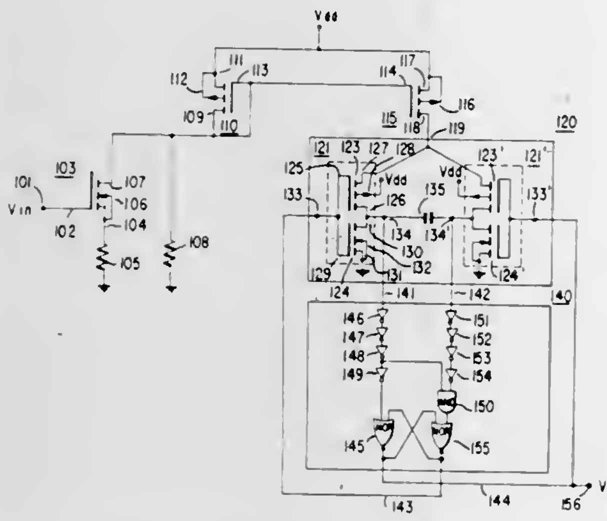
3,702,446
VOLTAGE-CONTROLLED OSCILLATOR USING COMPLEMENTARY SYMMETRY MOSFET DEVICES

Goetz Wolfgang Steudel, Flemington, N.J., assignor to RCA Corporation

Filed Sept. 7, 1971, Ser. No. 178,331

Int. Cl. H03k *3/282*

U.S. Cl. 331—111 **23 Claims**



A voltage-controlled oscillator that is compatible with integrated circuit techniques and comprises complementary symmetry MOSFET devices to provide linear operation over several frequency decades, and exhibits high input impedance and minimum power consumption. The frequency of operation is controlled by a current source which is controlled solely by an input voltage. The constant current source linearly charges a capacitor through a bridge circuit. The bridge circuit which includes two complementary MOSFET transistors in each arm is connected across the current source and arranged so that when one transistor in an arm switches on the diagonally opposite transistor, in the other arm, also switches on. The rising voltage across the capacitor is used to change the state of a bistable multivibrator when a given threshold voltage is reached. The output of the bistable multivibrator discharges the capacitor, causes the capacitor to be charged in the opposite direction and provides an output terminal for the voltage-controlled oscillator.

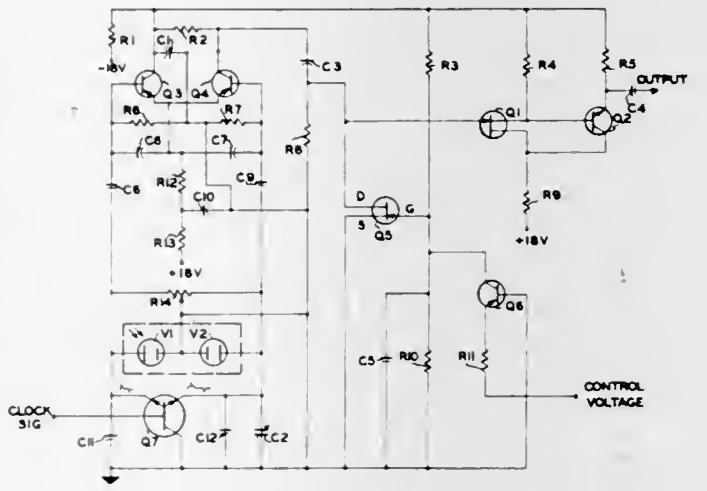
3,702,447
ELECTRONIC CHOPPER SYSTEM FOR USE IN FACSIMILE COMMUNICATION COMPRISING MEANS FOR ALTERNATELY GROUNDING AND UNGROUNDING INPUTS OF AMPLIFIER

Virgil H. Koning, Henrietta, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed July 1, 1968, Ser. No. 741,537

Int. Cl. H03c ; H04n *3/16;* **H01j** *39/12*

U.S. Cl. 332—3 **10 Claims**



An electronic chopper circuit for use in converting variable amplitude direct current signals to pulsed signals of similar characteristics. In conjunction with a facsimile scanning system, the modulated electrical signals generated by a photoelectric cell are applied to a differential amplifier after periodic interruption by the electronic chopping circuit in accordance with an input clock signal. The periodic interruption to the differential amplifier is provided by a dual emitter transistor which alternately grounds and ungrounds the input to the differential amplifier in response to an input clock signal. The gain of the differential amplifier is controlled by a field effect transistor which is operated as a variable resistor in response to a control voltage generated in response to the background level detected on a document. The output therefrom is a series of signal pulses, the heights of which are in direct relation to the level of the input signals.

3,702,448
IMPEDANCE MATCHED ULTRASONIC DELAY LINE WHEREIN ELECTRODES CONSIST OF BISMUTH AND INDIUM

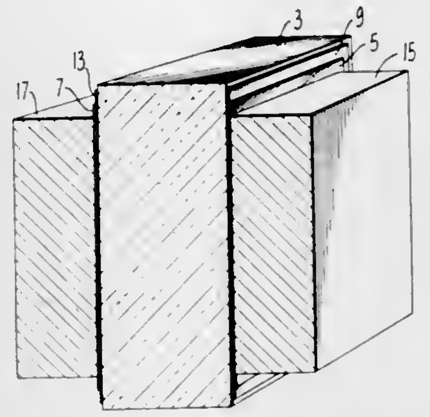
Emil V. Boblett, Los Altos Hills, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Feb. 16, 1971, Ser. No. 115,219

Int. Cl. H03h *9/30;* **H04r** *17/00;* **H03h** *7/38*

U.S. Cl. 333—30 R **5 Claims**

A sonic delay line wherein electric impulses are converted to acoustic impulses passed through glass and reconverted to electrical impulses, wherein the acoustic impedance of the transducer is matched to that of glass utilizing an alloy of approximately equal parts of bismuth and indium, by weight.



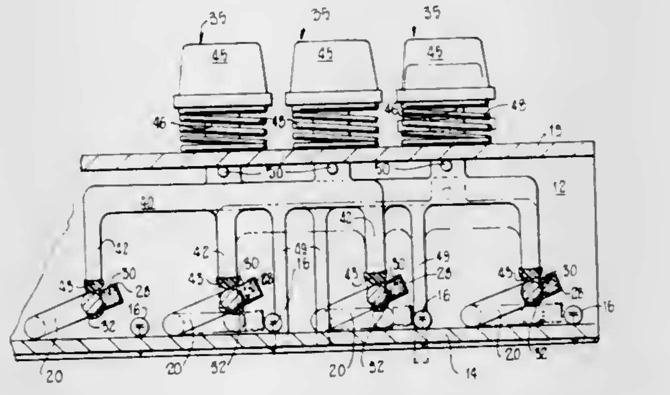
3,702,449
KEYBOARD ASSEMBLY

Carmell Adahan, Berkeley, Calif., assignor to The Singer Company, New York, N.Y.

Filed Aug. 27, 1971, Ser. No. 175,527

Int. Cl. H01h *3/12, 41/08*

U.S. Cl. 335—206 **8 Claims**



A keyboard assembly having a plurality of reed switches mounted on a base member, a plurality of key assemblies mounted on a mounting plate and a plurality of movable switch actuators mounted adjacent the switches. Each switch actuator comprises a bail pivotally mounted above the base member, a magnet carried by the bail and a spring for biasing the magnet-bail assembly away from the associated switch. Each key assembly comprises a reciprocable slide, a key top, a bias spring and a stop member for limiting the amount of travel of the slide in the return direction. A resilient cushioning material is provided on the underside of each bail and a contact portion of each slide to substantially reduce mechanical noise and wear.

3,702,450
PRINTED CIRCUIT STEERING COILS

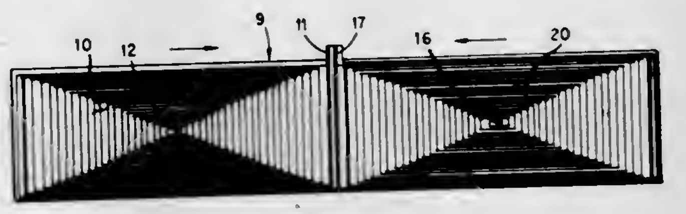
Robert T. Avery, Orinda; Glen R. Lambertson, Oakland, and Chester D. Pike, San Pablo, all of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed May 11, 1971, Ser. No. 142,147

Int. Cl. H01f *5/00*

U.S. Cl. 335—213 **6 Claims**

A printed circuit steering coil on a flexible board for producing a charged particle beam deflecting magnetic field wherein rectangular, continuous planar spiral coils are etched on the circuit board opposite sides such that as each of at least two boards are bent into cylindrical shapes and disposed interiorly in a steel tube of high permeability permitting beam passage, the coils provide for individual horizontal and vertical steering of the charged particles.



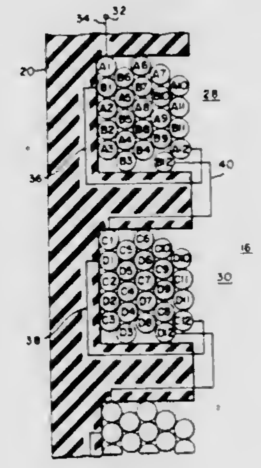
3,702,451
ELECTRICAL INDUCTIVE APPARATUS

Frederick H. Hofing, Sharpsville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 9, 1972, Ser. No. 224,703

Int. Cl. H01f *15/14*

U.S. Cl. 336—70 **5 Claims**



A transformer having a high-voltage winding wound with conductors having a small cross-sectional area, particularly with circular conductors. The winding is divided into sections by a supporting member and each section is wound with two conductors simultaneously. The two conductors are connected to each other and to the conductors of adjacent winding sections in a manner which increases the series capacitance of the high-voltage winding.

3,702,452
ELECTRICAL WINDINGS

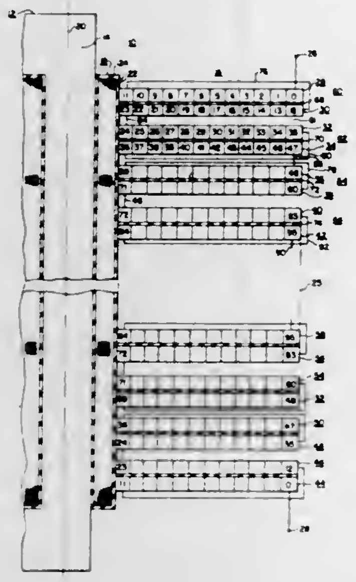
Dean A. Yannucci, Niles, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 8, 1971, Ser. No. 150,994

Int. Cl. H01f *27/08, 15/14*

U.S. Cl. 336—60 **29 Claims**

An electrical winding including a stack of axially aligned, continuous, pancake coils. The pancake coils are divided into pairs, and the coils of each pair are disposed closely adjacent one another to increase the capacitance between them. Adjacent pairs are spaced by a dimension selected to enable cooling fluid to flow between the pairs. The coils in each pair are directly interconnected, and the pairs of coils are interconnected, providing at least one electrical path through the winding.



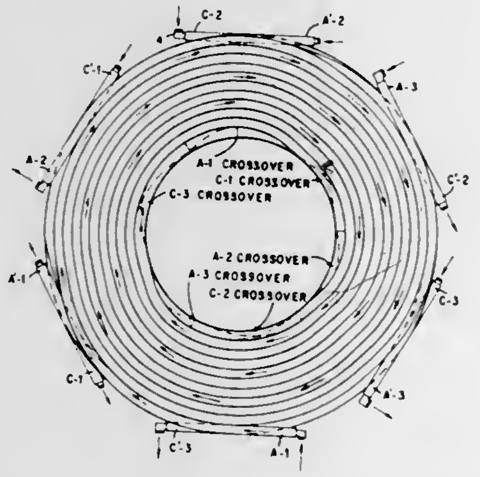
3,702,453
TEMPERATURE-COMPENSATED TRIMMING WINDINGS FOR WATER-COOLED MAGNET COILS

James N. Luton, Jr., Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed July 19, 1971, Ser. No. 163,680

Int. Cl. H01f *27/10, 27/28*

U.S. Cl. 336—62 **5 Claims**



A technique is disclosed for accurately adjusting the field shape of a high power density magnet system. The method uses to advantage the hollow tubular conductors that comprise the windings of the main coil. The trimming winding consists of an insulated wire (or wires) pulled through the hollow conductor (or conductors) whose relative field strength is to be altered. The amplitude and polarity of current in the wire is chosen to provide the desired field shape.

3,702,454
AMBIENT COMPENSATED TIME DELAY SWITCH

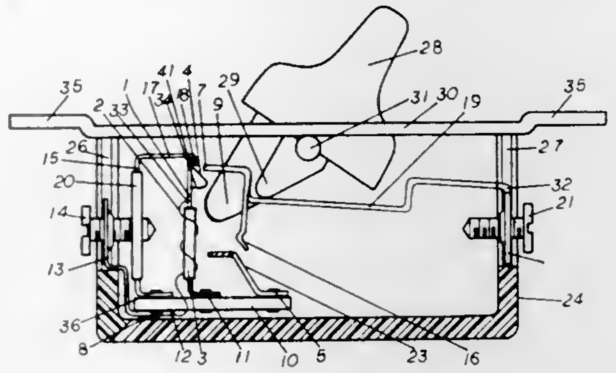
Horace D. Brown, Miami, Fla., assignor to Montec Corporation, Miami, Fla.

Filed Sept. 24, 1971, Ser. No. 183,513

Int. Cl. H01h *61/013, 71/16*

U.S. Cl. 337—77 **3 Claims**

A switch having a bimetal latch for locking a movable spring contact in closed circuit with a second contact, and a heating coil for activating the latch to release the spring contact. A second bimetal element engages and opposes the bimetal latch and thereby counteracts the torque developed in the bimetal latch by changes in the ambient temperature.



3,702,455
ELECTRICAL CONNECTOR

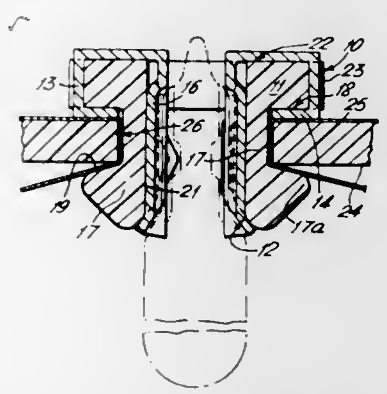
Terence Robert Raynor, and Peter Charles Terence Abbott, both of London, England, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 1, 1971, Ser. No. 111,420

Claims priority, application Great Britain, June 18, 1970, 29,570/70

Int. Cl. H01r *33/00;* **H05k** *1/12*

U.S. Cl. 339—17 C **1 Claim**



An electrical connector is disclosed and comprises a body part which is preferably formed as an extrusion and has a pair of contact parts secured thereto. Each contact part has a contact arm for engaging an electrical component such as a vehicle instrument and further has a contact surface located adjacent one of a pair of resilient legs formed on the body part whereby the contact surface and the leg cooperate to engage a conductive track on an insulating panel and make electrical connection therewith.

3,702,456
ELECTRICAL TERMINAL BLOCK FOR INTERCONNECTING A PLURALITY OF CONDUCTORS

George Allen Patton, Pfafftown, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

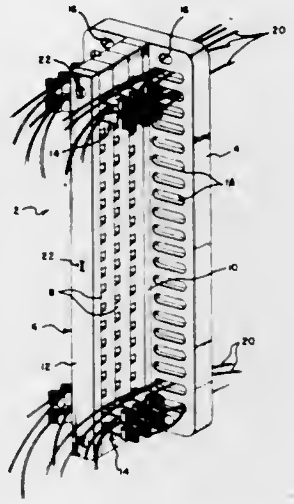
Continuation-in-part of Ser. No. 805,160, March 7, 1969, Pat. No. 3,617,983. This application April 7, 1971, Ser. No. 132,038

Int. Cl. H01r *9/00, 9/06*

U.S. Cl. 339—198 H **6 Claims**

Electrical Terminal Block comprises an insulating base member having a stack of individual clamping blocks mounted thereon. Individual terminals devices are contained in the stacks between adjacent clamping blocks and extend laterally on each side of the stack. The ends of the terminal devices are provided with terminal means in the form of inwardly extending slots which are adapted to receive insulated wires. The preferred form of the invention may also include means on each terminal device for trimming the end portion of a wire

concomitantly with insertion into the slot. Devices of this type are commonly used in the communication industry for permanently or semi-permanently interconnecting a multiplicity of conductors from a plurality of multi-conductor cables.



3,702,457
RELAY SOCKET

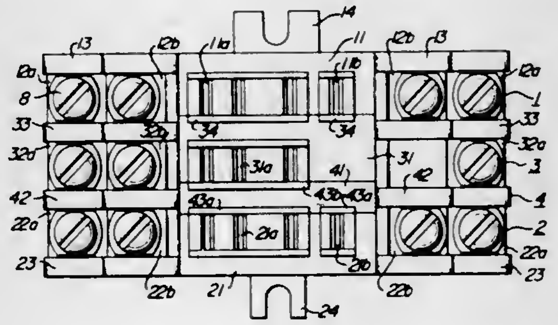
Teizo Fujita, 3-34, Naka, Tezukayama, Sumiyoshi-ku, Osaka, Japan

Filed March 15, 1971, Ser. No. 124,197. The portion of the term of this patent subsequent to Feb. 15, 1989, has been disclaimed.

Claims priority, application Japan, April 15, 1970, 45/32113

Int. Cl. H01r *9/00*

U.S. Cl. 339—198 G **4 Claims**



A relay socket for electrically connecting the terminals of a relay plug to external lead wires comprises at least two socket units of symmetrical configuration. Each socket unit has an open front side and a closed back side; and the two units are assembled in front-to-front relationship to one another, with their open sides in mutually facing relationship and with a separator plate interposed therebetween. Each socket unit includes a center base having an upper surface formed with a plurality of openings adapted to receive the terminals of a relay plug, and includes a pair of lead-out terminal mounting portions formed at the opposite sides of said center base. Internal recesses within each socket unit are adapted to receive substantially L-shaped metallic connecting plates each of which provides a lead-out terminal at one end thereof, disposed adjacent a lead-out terminal mounting portion of the socket unit, and the other end of each metallic connecting plate is fitted with a plug receiving terminal adapted to be positioned adjacent one of the openings in the center base of said socket unit. The socket configuration on one side of the separator plate can comprise a plurality of like units separably and complementarily fitted to one another in front-to-back relationship.

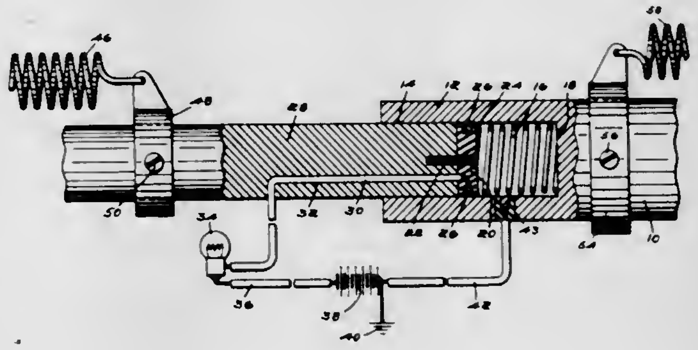
3,702,458
SIGNAL DEVICE TO INDICATE MALFUNCTION OF VEHICLE CLUTCH

Alfred J. Capachietti, Sr., 27 Bowen Avenue, Medford, Mass., and Daniel P. Capriotti, Sr., Pearl Street, Somerville, Mass.

Filed Sept. 20, 1971, Ser. No. 181,736

Int. Cl. G08b *21/00*

U.S. Cl. 340—52 R **8 Claims**



A clutch shaft has a cavity that receives a compression spring outside of which is a first electrical contact. A telescoping plunger rod movably extends into said cavity and it carries another electrical contact normally spaced from the first contact. When the clutch is worn or has any malfunction, such as being out of adjustment, the telescoping shaft moves farther into said cavity and at a predetermined point the two contacts meet, giving a signal such as illuminating a bulb or making a buzzing sound, to indicate the clutch needs attention.

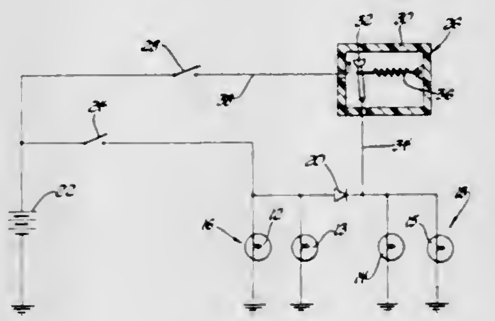
3,702,459
VEHICLE DECELERATION CIRCUIT

Michael L. Bauchan, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 3, 1971, Ser. No. 149,708

Int. Cl. B60q *1/44*

U.S. Cl. 340—62 **1 Claim**

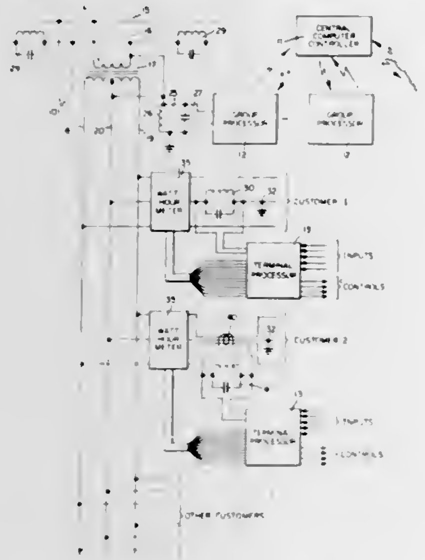


Apparatus for indicating deceleration and braking of a vehicle. The apparatus includes first and second groups of brake lamps each of which includes a first lamp on the left side of the vehicle and a second lamp on the right side of the vehicle. On application of the vehicle brakes all four of the brake lamps are energized to advise following motorists that the vehicle is being braked. When the vehicle is being decelerated at greater than a certain rate of deceleration while travelling faster than a certain speed only the second group of brake lamps is energized to indicate deceleration of the vehicle to following motorists.

3,702,460

COMMUNICATIONS SYSTEM FOR ELECTRIC POWER UTILITY

John B. Blose, 2195 Winding Way, Broomall, Pa.
Continuation-in-part of Ser. No. 846,336, July 31, 1969, abandoned. This application Nov. 30, 1971, Ser. No. 203,348
Int. Cl. H04b *13/02*; H04q *11/00*
U.S. Cl. 340—150 **18 Claims**

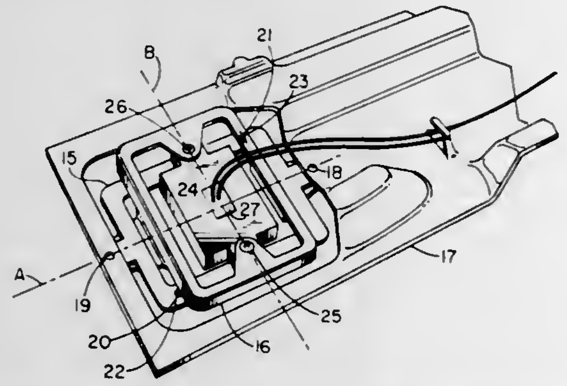


An electric power utility communication system is disclosed comprising a plurality of geographically distributed group control units and groups of terminal processor units, with each such terminal processor unit within a group coupled to a respective group control unit through the neutral conductor of the power utility distribution lines. Availability of the neutral as a communications link is achieved by inserting a parallel resonant circuit between the neutral and ground at each ground point in the system. Alternately, the signal generating and/or receiving equipment may be connected between the conventionally grounded neutral and deep earth ground, to develop the communications signal across the earth impedance. Communications information is transmitted over the neutral by coded high frequency signals to the terminal processor units which have electronic logic capacity to accept and perform command functions, interrogate meters, and transmit information back over the neutral to their respective group control units. Overall control is achieved by a central computer controller coupled to each group control unit by conventional transmission means, and which generates and receives coded signals through the group control units.

3,702,461

DISK FILE GIMBAL HEAD MOUNT

Gill Cantwell, Los Angeles, Calif., assignor to Century Data Systems, Inc., Anaheim, Calif.
Filed May 19, 1971, Ser. No. 144,903
Int. Cl. G11b *5/60*
U.S. Cl. 340—174.1 E **5 Claims**

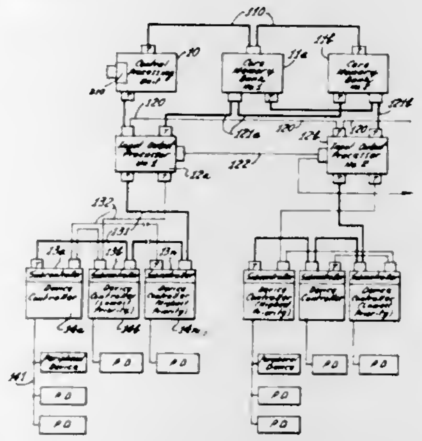


A rigid frame and gimbal spring may be utilized to form a hybrid gimbal arrangement for mounting a disc file head. Such a configuration will permit both normal loading and free rotation of the head about axes parallel with surface of the rotating disc.

3,702,462

COMPUTER INPUT-OUTPUT SYSTEM

Alfred W. England, Reseda, Calif., assignor to Delaware SDS, Inc., El Segundo, Calif.
Filed Oct. 26, 1967, Ser. No. 678,235
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 **36 Claims**

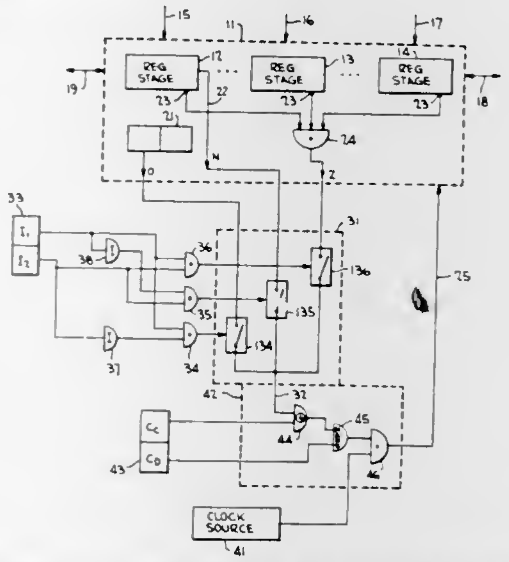


A computer system for digital computers is disclosed in which peripheral devices cooperate with "hardware" input-output processors (IOP) independent from the central processor (CPU) of the computer for handling the transfer of data between peripheral devices and memory which is also accessible to the CPU. Signal communication runs through special transmission facilities which include separate communication paths for the IOPs and CPU to memory, separate communication paths for control and data signals, and separate communication paths for determination of priority of operations among several IOPs and the CPU at memory, or between several IOPs at the IOP or between several devices at the device. The devices are controlled by device controllers which include subcontrollers which together with a portion of the IOPs provides a communication interface configuration between devices and IOPs.

3,702,463

DATA PROCESSOR WITH CONDITIONALLY SUPPLIED CLOCK SIGNALS

Robert J. Lesniewski, Lansdale, Pa., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Dec. 23, 1970, Ser. No. 100,996
Int. Cl. G06f *9/00*
U.S. Cl. 340—172.5 **12 Claims**

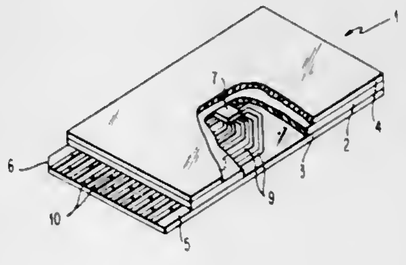


A digital data processor wherein operations are performed in response to a pulse from a clock source includes means for deriving binary signals indicative of the state of various indicators within the processor. One of the indicator signals is selectively fed through a first switch having a single output lead. The indicator output signal is fed to a second switch responsive to a command signal source and pulses from a clock source. In response to one component of the command signal source having a predetermined value, pulses from the clock source are invariably fed through the second switch. In response to the other state of the one component, pulses from the clock source are selectively gated through the second switch, depending upon the relative values of binary signals derived from the first named switch and a second component of the command signal source.

3,702,464

INFORMATION CARD

Paul P. Castrucci, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 4, 1971, Ser. No. 140,174
Int. Cl. G06k *19/00*; G11c *11/36*, *17/00*
U.S. Cl. 340—173 SP **1 Claim**

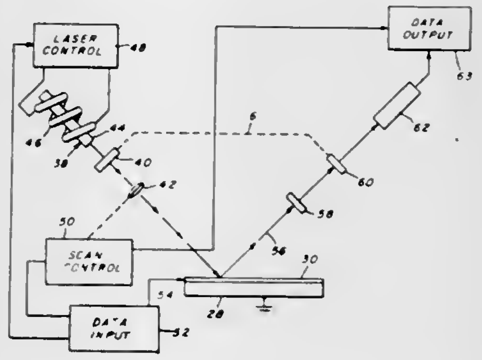


An information card for credit and accounting system having a monolithic or solid state memory for storage of information responsive to computer controlled systems.

3,702,465

ELECTRO-OPTIC MASS MEMORY

James R. Cricchi, Catonsville, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 4, 1971, Ser. No. 168,913
Int. Cl. G11c *13/04*, *11/34*
U.S. Cl. 340—173 LT **10 Claims**

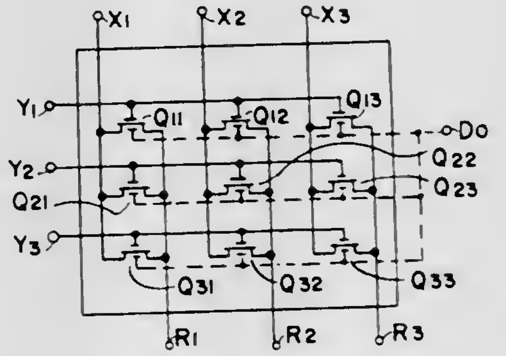


A metal-nitride-oxide semiconductor memory device wherein information is written into the device by the combination of an applied electric field and a source of light, and thereafter read out by reflecting light from the surface of an area of the device whose oxide-nitride interface has been previously charged with information written into the device.

3,702,466

SEMICONDUCTOR INTEGRATED CIRCUIT MEMORY DEVICE UTILIZING INSULATED GATE TYPE SEMICONDUCTOR ELEMENTS

Masaru Nakagiri; Katsuhiro Onoda; Ryo Igarashi; Toshio Wada; Sho Nakanuma, and Tohru Tsujide, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan
Filed Nov. 4, 1970, Ser. No. 86,748
Claims priority, application Japan, Nov. 5, 1969, 44/88993; Nov. 5, 1969, 44/88994
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **7 Claims**

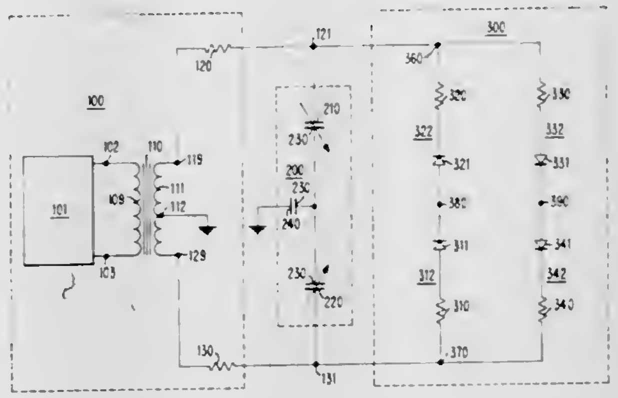


A semiconductor integrated circuit includes a plurality of insulated gate field effect memory transistors arranged in a row-column matrix. Each of the memory transistors has an insulating film for establishing electron tapping centers. The source areas of the memory transistors are in the form of teeth-like projections which extend into the space defined between similarly formed projections in the memory transistor drain areas.

3,702,467

SHAFT POSITION SENSING DEVICE

George Melnyk, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 23, 1971, Ser. No. 201,281
Int. Cl. G08c *19/16*
U.S. Cl. 340—200 **6 Claims**



A shaft position sensing device provides a non-velocity sensitive, low noise output signal substantially free of any AC component. In one embodiment, a differential variable capacitor, constructed such that no commutation or slip-rings are necessary, is mounted to change capacitance with shaft rotation. This capacitor modulates a pair of AC signals which are 180° out of phase. For detection, the pair of modulated AC signals are applied to a ring demodulator circuit which provides, at a balanced output, a signal indicative of shaft position and substantially free of any AC component. The zero crossings and peaks of this signal, as well as its amplitude and polarity are indicative of shaft position.

3,702,468
FIRE ALARMING SYSTEM

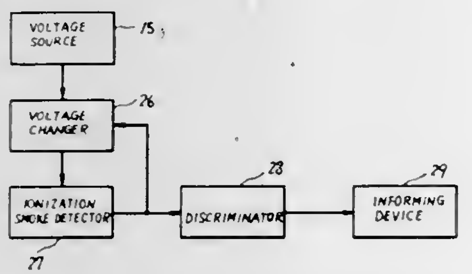
Koji Sasaki, Tokyo, Japan, assignor to Nittan Company Limited, Tokyo, Japan

Filed July 28, 1971, Ser. No. 166,756

Claims priority, application Japan, Aug. 10, 1970, 45/69275; Aug. 10, 1970, 45/69278; Aug. 20, 1970, 45/72365; Aug. 31, 1970, 45/75628

Int. Cl. G08b *17/10, 29/00*

U.S. Cl. 340—237 S **9 Claims**



An ionization smoke detector having means for briefly reducing the voltage across the series connected ionization chambers when the detector is actuated by either smoke or the failure of a component part. The detector therefor, when actuated by smoke will produce a periodic signal as the voltage is reduced and returns again to the normal voltage. However, if the detector is defective a continuous signal is produced. Through the use of a discriminator connected to the detector the periodic signal will produce an alarm while the continuous signal will provide an indication of a faulty detector.

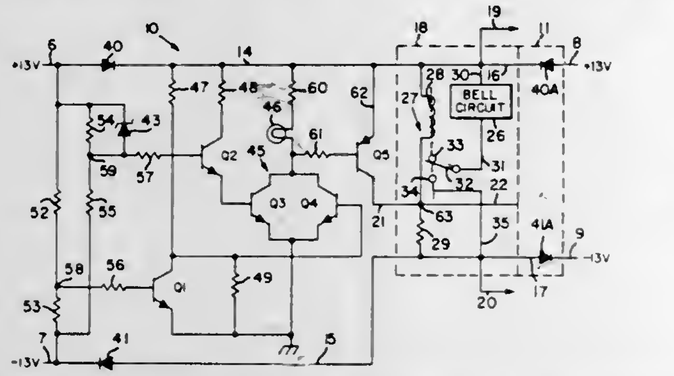
3,702,469
ALARM CIRCUIT FOR INDICATING FAILURE IN REDUNDANT POWER SUPPLIES

Joseph Golja, Redwood City, Calif., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.

Filed Sept. 3, 1971, Ser. No. 177,765

Int. Cl. F08b *21/00*

U.S. Cl. 340—248 A **7 Claims**



The output voltages of a pair of dual polarity power supplies are coupled together through associated solid state alarm-sense circuits to common utilization equipment. Each alarm-sense circuit comprises a pair of switching transistors connected to associated voltage dividers that are connected across the output lines of a power supply; a pair of transistors connected in parallel; and a lamp. The output lines supporting the same polarity voltages are connected together through steering diodes that prevent one supply loading the other. The switching transistors detect increases and decreases in supply voltages that are greater than prescribed amounts. In each alarm-sense circuit, the parallel connected transistors are responsive to the operation of the switching transistors to light the lamp to indicate failure of the associated power supply. Output signals of the alarm-sense circuits are connected to a bell for also producing an audio alarm when a power supply fails. A zener diode is connected to a voltage divider for causing a switching transistor to detect a supply failure when the absolute values of the opposite polarity supply voltages from an associated power supply increase at the same rate.

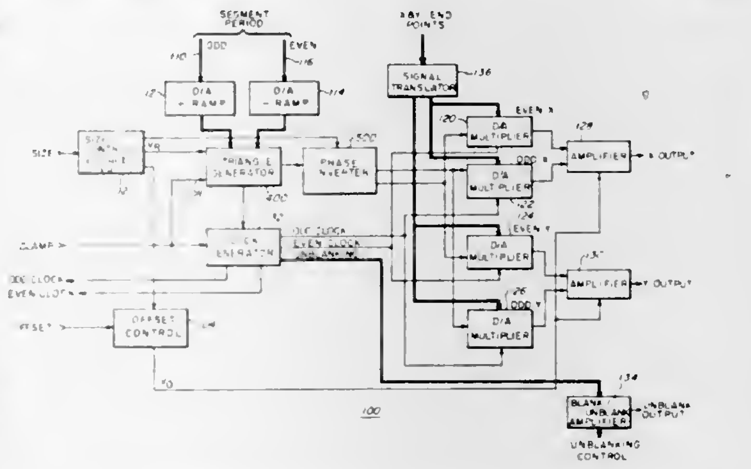
3,702,470
CONSTANT WRITING RATE CHARACTER GENERATION AND DISPLAY SYSTEM

Joseph E. Bryden, Framingham, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Sept. 30, 1970, Ser. No. 76,912

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 A **5 Claims**



A character generator in which strokes are generated to form characters wherein each stroke is treated as a vector whose end points are stored digitally. The characters are formed from a variable number of strokes which are of varying periodicity such that a constant writing speed is obtained regardless of the number of strokes required per character; the time for writing a particular stroke is proportional to the stroke length. Two sets of digital to analog converters sum analog signal outputs in two channels such that digital control signals are loaded into the digital to analog converters alternately while X and Y axis beam steering and appropriate blanking and unblanking signals are employed for stroke writing.

3,702,471
MEASURING APPARATUS

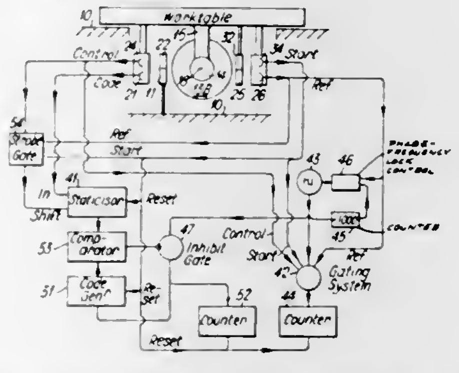
Christopher John Kennedy; Alexander Turnbull Shepherd, and Graham Isaac Thomas, all of Edinburgh, Scotland, assignors to Ferranti, Limited, Hollinwood, Lancashire, England

Filed Jan. 5, 1971, Ser. No. 104,095

Claims priority, application Great Britain, Jan. 8, 1970, 902/70

Int. Cl. G08c *9/00*

U.S. Cl. 340—347 P **11 Claims**



Apparatus for providing an absolute indication (that is, an indication which is not lost due to interruption of the supply source) of the position of a movable object, such as a machine tool, by means of a series of binary digital elements extending throughout the range of movement to form a chain-code sequence of dissimilar digital patterns. Each position of the tool is identified in dependence on the particular one of those patterns which is then in registry with a reading head, the identification being in terms of the number of electrical pulses needed to actuate a chain-code generator to produce a similar pattern.

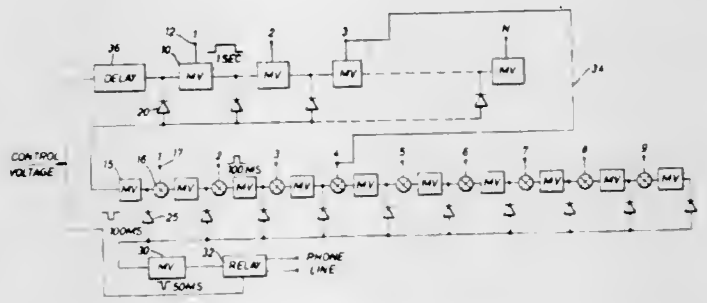
3,702,472
PULSE GENERATOR AND ENCODER

Louis A. Stevenson, Jr., Houston, Tex., assignor to A-T-O Inc., Cleveland, Ohio

Division of Ser. No. 685,391, Nov. 24, 1967, Pat. No. 3,581,216. This application Oct. 12, 1970, Ser. No. 80,242

Int. Cl. G08c *19/18*

U.S. Cl. 340—359 **4 Claims**



A circuit for encoding a multiple digit number, each digit represented by a plurality of pulse trains including a first plurality of serially connected monostable circuits corresponding to the number of digits in the number and a second plurality of serially connected monostable circuits interspersed with gate means. Selective connecting means provides means for applying control voltages from each of the first monostable circuits to the gate means. Connecting means connects each of the first monostable circuits to the first monostable circuit of the second plurality. The application of a trigger pulse to the first monostable circuit of the second plurality produces a pulse train output from the second plurality corresponding to the multiple digit by control voltage operation of the interspersed gate means by the first plurality.

A pulse generating circuit particularly useful as an encoder for automatic electronic dialing equipment including a plurality of serially connected first monostable circuits, a plurality of serially connected second monostable circuits with gate means connected therebetween, means connecting each of said first monostable circuits to the first circuit of said second monostable circuit, means for connecting each said first monostable circuits to a control terminal of said gate means, and means connected with each of said second monostable circuits for receiving a pulse train. Each of the first monostable circuits may correspond to a digit of a plural digit number, and each of the second monostable circuits may correspond to a value of each digit.

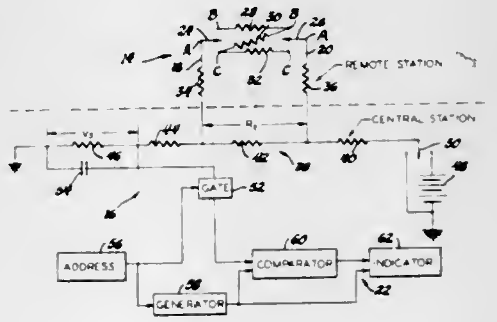
3,702,473
SEVEN-STATE RESISTANCE SENSING SUPERVISORY SYSTEM UTILIZING SINGLE POLE-DOUBLE THROW SWITCHES

William C. Fink, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 27, 1971, Ser. No. 175,570

Int. Cl. G08b *1/08*

U.S. Cl. 340—409 **3 Claims**



A supervisory circuit is located at a remote station which is to be monitored from a central station. The supervisory circuit includes first and second sensing switches each operable between a first position and a second position. In addition, the supervisory circuit includes first, second and third sensing resistors interconnected with the first and second sensing switches. A pair of sensing conductors connects the supervisory circuit from the remote station to the central station where a signal resistance is presented between the sensing conductors. The signal resistance indicates the state of the supervisory circuit by assuming one of seven different values each corresponding to a different one of seven possible states of the supervisory circuit.

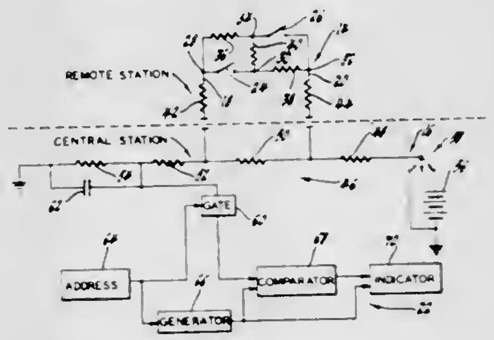
3,702,474
SEVEN STATE RESISTANCE SENSING SUPERVISORY SYSTEM

William C. Fink, and William R. Stewart, both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 27, 1971, Ser. No. 175,572

Int. Cl. G08b *1/08*

U.S. Cl. 340—409 **3 Claims**



A supervisory circuit is located at a remote station which is to be monitored from a central station. The supervisory circuit includes first and second sensing switches each operable between an opened position and a closed position. In addition, the supervisory circuit includes first, second and third sensing resistors interconnected with the first and second sensing switches. A pair of sensing conductors connects the supervisory circuit from the remote station to the central station where a signal resistance is presented between the sensing conductors. The signal resistance indicates the state of the supervisory circuit by assuming one of seven different values each corresponding to a different one of seven possible states of the supervisory circuit.

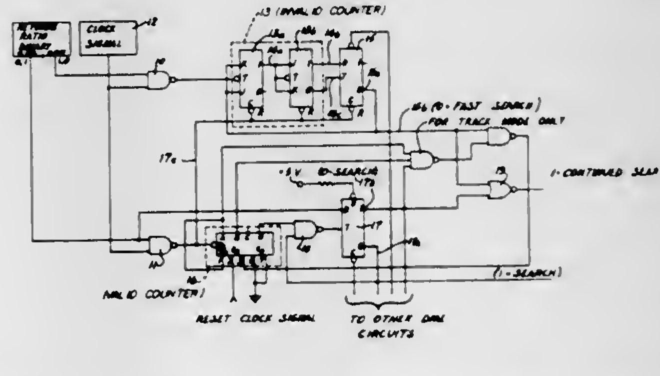
3,702,475
SEARCH-TRACK DECISION CIRCUIT FOR DISTANCE MEASURING EQUIPMENT

John R. Alden, Olathe, and John L. Aker, Chanute, both of Kans., assignors to King Radio Corporation

Filed Aug. 28, 1970, Ser. No. 67,945

Int. Cl. G01s *9/14, 9/56*

U.S. Cl. 343—7.3 **12 Claims**

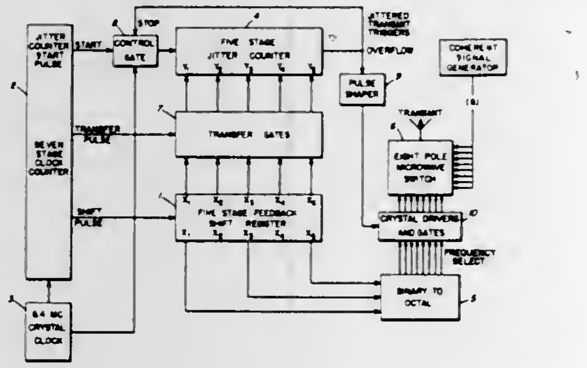


A DME having means for facilitating the rapid identification of its own replies from a plurality of received replies sequentially tests only the time/distance corresponding to the next occuring reply pulse received and uses a two counter digital concept to count both valid and invalid replies in making the decision to switch from the search mode to the track mode of operation.

3,702,476
DIGITAL PROGRAMMED TRANSMITTER

Fred E. Nathanson, Silver Spring, and David M. White, Adelphi, both of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed March 18, 1963, Ser. No. 266,112
Int. Cl. G01s *7/28*
U.S. Cl. 343—17.1 PF **7 Claims**

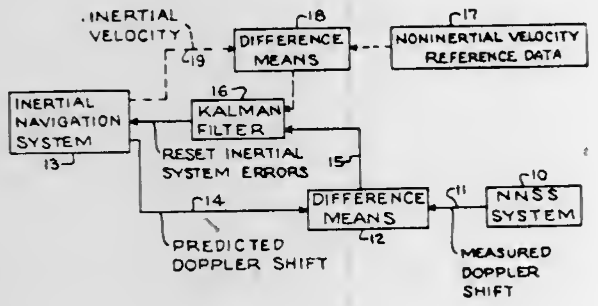

JITTER COUNTER START PULSE
START
CONTROL GATE
STOP
FIVE STAGE JITTER COUNTER
JITTERED TRANSMIT TRIGGERS
OVERFLOW
COHERENT SIGNAL GENERATOR
PULSE SHAPER
SEVEN STAGE CLOCK COUNTER
TRANSFER PULSE
TRANSFER GATES
TRANSMIT
EIGHT POLE MICROWAVE SWITCH
SHIFT PULSE
FIVE STAGE FEEDBACK SHIFT REGISTER
CRYSTAL DRIVERS AND GATES
FREQUENCY SELECT
BINARY TO OCTAL
6.4 MC CRYSTAL CLOCK

4. A radar transmitter for providing a coded pulse transmission comprising,
  - a signal generator providing a plurality of pulses,
  - means for producing a pseudo-random code,
  - counting means connecting to said code means or providing control signals which are spaced in accordance with the code generated by said code means, and
  - driving means for transmitting the output pulses from said signal generator in response to said control signals, thereby producing a transmission having a variable pulse repetition frequency.

3,702,477
INERTIAL/DOPPLER-SATELLITE NAVIGATION SYSTEM

Robert G. Brown, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed June 23, 1969, Ser. No. 835,819
Int. Cl. G01s *5/00*
U.S. Cl. 343—112 C **10 Claims**

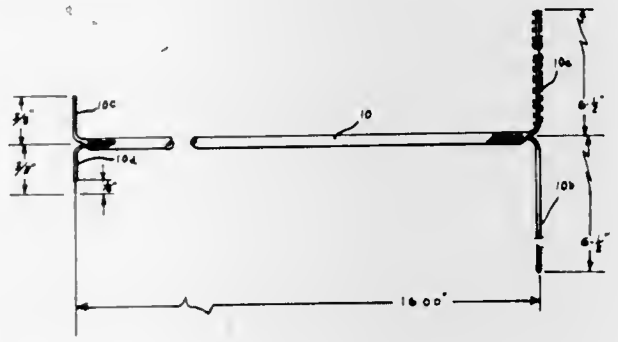


Terrestrial navigation apparatus for a vehicle includes a system of inertial sensors generating signals representative of the position and velocity of the vehicle, a data processor, and a receiver for receiving data from a doppler satellite system including a signal of known frequency as well as signals representative of the satellite's position. The difference between the doppler frequency shift computed from the information received from the satellite and the doppler frequency shift computed by the inertial system is modeled as an observable in a Kalman filter programmed into the data processor to generate a set of error signals representative of estimates of the errors in the position and velocity signals generated by the inertial sensors. The error estimate signals are then used to correct the errors in the inertial sensors. In one disclosed embodiment, the external, observed parameter is a discrete frequency; whereas in an alternative system, it is a frequency count.

3,702,478
ANTENNA AND ANTENNA COUPLING APPARATUS

Flefterios Georgian, Andover, Mass., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Sept. 9, 1971, Ser. No. 178,865
Int. Cl. H01q *1/24*
U.S. Cl. 343—702 **2 Claims**

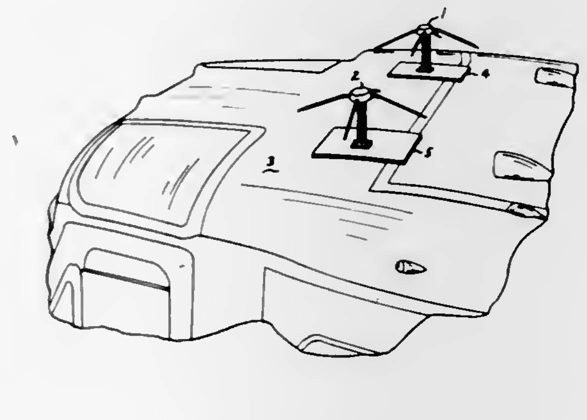


An antenna and antenna coupling apparatus is provided in which a receiving antenna is used with a super regenerative transponder receiver. The antenna comprises a coaxial cable which has the outer conductor stripped away from the inner conductor at one end and both the outer conductor and inner conductor bent so as to be at right angles. At the other end of the cable the outer conductor is also stripped away from the inner conductor and both are also bent at right angles. The coaxial cable passes through a shield enclosing the receiver and is soldered at the center of the bottom of the shield thus coupling the antenna to the receiver.

3,702,479
SPACE DIVERSITY ANTENNA SYSTEM FOR UHF SATELLITE COMMUNICATIONS FOR HELICOPTERS

Jerome W. Uhrig, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force

Filed July 7, 1971, Ser. No. 161,360
Int. Cl. H01q *1/28*
U.S. Cl. 343—705 **3 Claims**

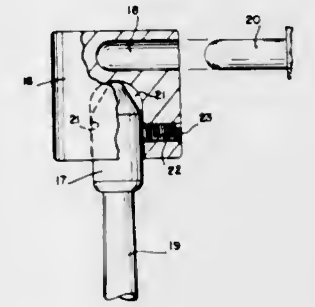


Two pair of crossed tube radiators orthogonally fed and spaced approximately one wavelength apart with coaxial choke loading at the end of each radiator provides an antenna system for transmitting and receiving electromagnetic radiation through the plane of the rotating blades of a helicopter on two widely spaced frequencies in the UHF communication band.

3,702,480
ELECTRICAL CONNECTOR FOR COUPLING AN EXTERNAL RECEIVER TO A MOBILE WHIP ANTENNA

John C. Byars, 1696 Prairie Road, Junction City, Oreg.

Filed March 31, 1971, Ser. No. 129,905
Int. Cl. H01q *1/32*
U.S. Cl. 343—715 **1 Claim**

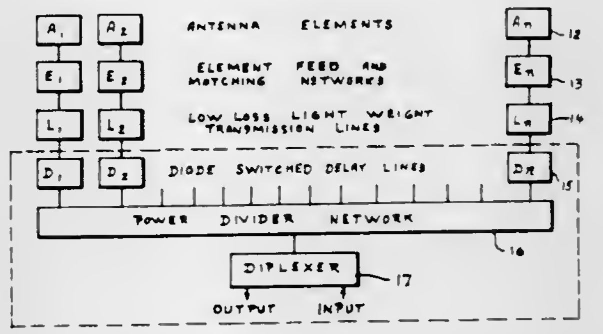


An antenna tip is disclosed for use in conjunction with a truck mounted antenna with the tip being configured to receive an antenna lead plug whereby a second radio may utilize the truck antenna. The tip removably receives the plug in frictional engagement to retain same yet permitting convenient disengagement. A modified form of the invention is in the form of an attachable tip structure mountable to existing antenna tips and having locking means to prevent loss during vehicle travel.

3,702,481
SATELLITE UNFURLABLE ANTENNA ARRAY

William B. Koller, Akron; Robert B. Higgins, Uniontown, and James W. Haylett, Akron, all of Ohio, assignors to The United States of America as represented by the Air Force

Filed July 16, 1971, Ser. No. 163,224
Int. Cl. H01q *3/26*
U.S. Cl. 343—844 **8 Claims**


A1
A2
ANTENNA ELEMENTS
An
12
E1
E2
ELEMENT FEED AND MATCHING NETWORKS
En
13
L1
L2
LOW LOSS LIGHT WEIGHT TRANSMISSION LINES
Ln
14
D1
D2
DIODE SWITCHED DELAY LINES
Dn
15
POWER DIVIDER NETWORK
16
DIPLEXER
17
OUTPUT
INPUT

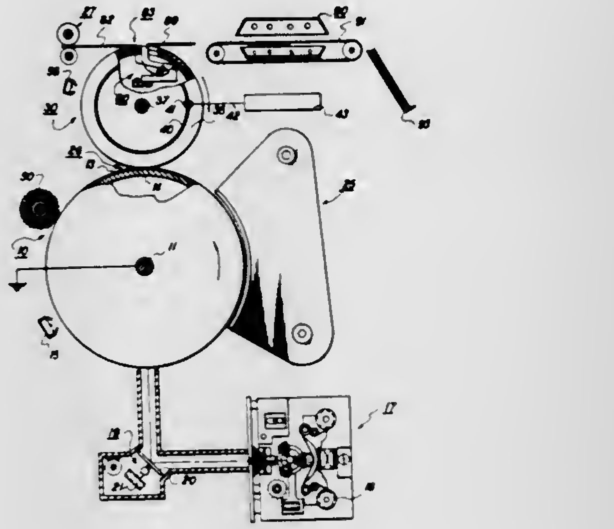
Disc on rod antenna radiating elements having bifilar helix feeds are arranged in a particular concentric circle type array configuration to achieve high gain, improved elipticity and size and weight economies. Element spacing is adjusted to prevent element collecting aperture overlap. A collapsible segmented dielectric rod in combination with ring members of radial wire segments are utilized to provide an unfurlable array in one preferred embodiment.

3,702,482
BIAS ROLL TRANSFER

Charles Dolcimascolo, Fairport; Daniel S. Hoffman; Hugh L. Jones, both of Rochester, and James E. Mercik, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1970, Ser. No. 100,969
Int. Cl. G03g *15/04, 15/08, 15/16*
U.S. Cl. 346—74 ES **11 Claims**

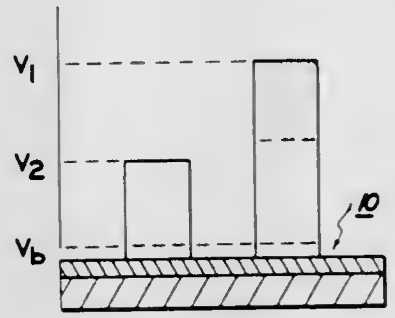
A biasable transfer member is herein disclosed suitable for use in transferring xerographic images from a photoconductor to a final support sheet. The member is adapted to electrically cooperate with the photoconductor to establish a directional force field therebetween capable of attracting toner from the photoconductor toward the member and features a structure which provides for a more efficient transfer operation while at the same time accurately matching the speed of the support sheet to the photoconductor.



3,702,483
COLOR RENDITION METHOD

Joseph Fantuzzo, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1970, Ser. No. 100,982
Int. Cl. G03g *15/04, 15/08;* **H04n** *1/46*
U.S. Cl. 346—74 ES **12 Claims**

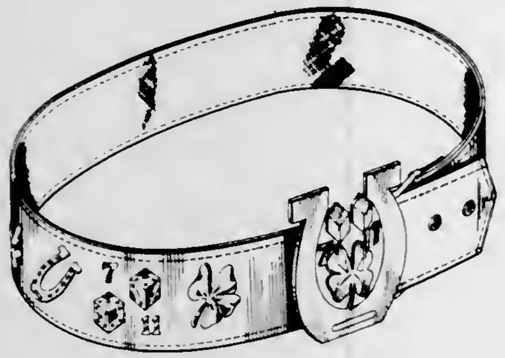


A simple xerographic color process is herein disclosed for reproducing functional color. An original, containing color information, is recorded on a charged photoreceptor so that each function color found in the original is registered thereon at a discrete charge density level. The plate is then transported through a developing station containing a plurality of developing units, the units being equal in number to the number of functional colors found in the original. Each developing unit has an electrical control means operatively associated therewith to control development whereby only color components recorded at or above a predetermined potential are developed within the unit. The recorded images are developed in a descending order of magnitude whereby different and distinct colors are produced for each color component recorded on the photoconductive element. The final color rendition is transferred, in a single operation, to a sheet of final support material.

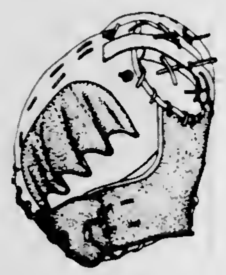
DESIGNS

NOVEMBER 7, 1972

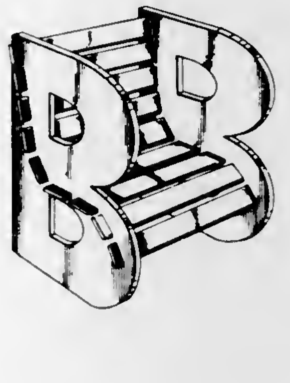
225,043
BELT
Melvin V. Zakarin, 23 Ogden Lane, Englishtown, N.J. 07726
Filed July 14, 1970, Ser. No. 23,944
Term of patent 3½ years
Int. Cl. D2—*07*
U.S. Cl. D2—385



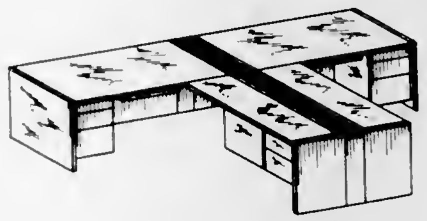
225,044
BASEBALL MITT
Richard E. Bates, Ashland, Ky., assignor to Wilson Sporting Goods Co., River Grove, Ill.
Continuation of design applications Ser. No. 23, 724, Ser. No. 23,725, Ser. No. 23,726, Ser. No. 23,727, and Ser. No. 23,736, all June 29, 1970, all now abandoned. This application July 12, 1971, Ser. No. 161,376
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—361



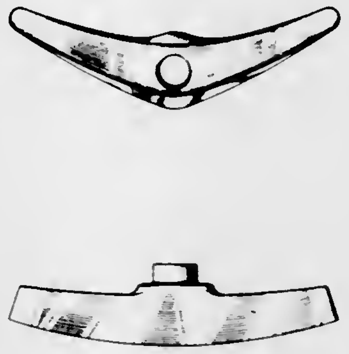
225,045
CHAIR
Frederick G. Kohl, Brooklyn Heights, and Robert K. Marceca, Chappaqua, N.Y., assignors to Rio Enterprises Incorporated, New York, N.Y.
Filed Aug. 6, 1970, Ser. No. 24,352
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—12



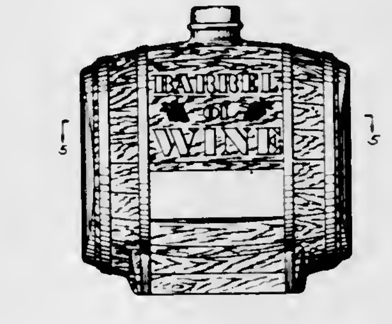
225,046
DESK
John Nance, Quakertown, Pa., assignor to JG Furniture Company, Inc., New York, N.Y.
Filed Dec. 29, 1970, Ser. No. 26,689
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—157



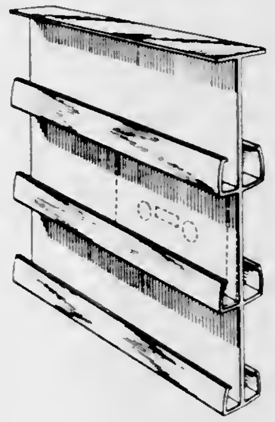
225,047
LOCK SET HANDLE
John Axel Tornoe and Robert Anthony Marotto, Redwood City, Calif., assignors to Schlage Lock Company
Filed Feb. 22, 1971, Ser. No. 117,875
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—138



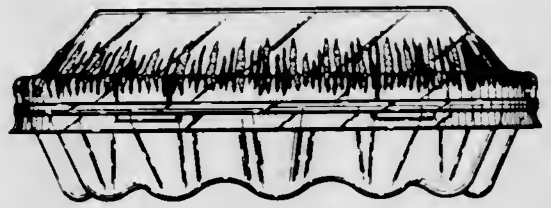
225,048
BOTTLE
Howard Cooper, Suite 7707, 175 E. Delaware, Chicago, Ill. 60611
Filed Jan. 20, 1971, Ser. No. 108,243
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—28



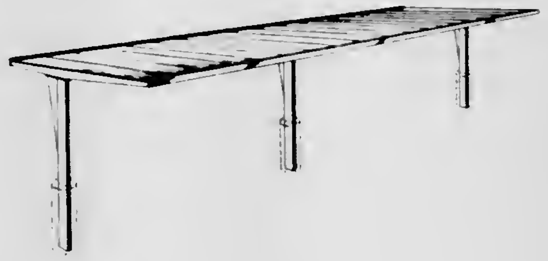
225,049
CASSETTE PACKAGING HOLDER
Larry L. Fites, Kalamazoo, and Kingsley M. Mann, Portage, Mich., and Karl A. Utrecht, Cincinnati, Ohio, assignors to The Upjohn Company, Kalamazoo, Mich.
Filed Sept. 29, 1970, Ser. No. 25,247
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—187



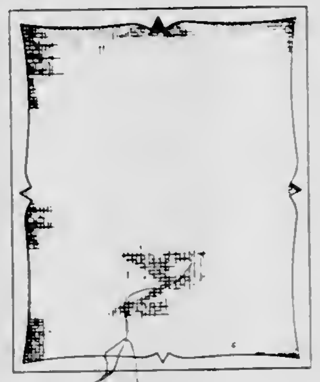
225,050
PACKAGING CONTAINER FOR A PIE OR THE LIKE
James N. Cannell, % The Quality Bakery, 50 N. Glenwood Ave., Columbus, Ohio 43222
Filed Feb. 17, 1971, Ser. No. 116,304
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—220



225,051
CARPORT
Jack A. Smithhart, Garland, Tex., assignor to Continental Steel Company, Garland, Tex.
Filed Sept. 4, 1969, Ser. No. 19,015
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



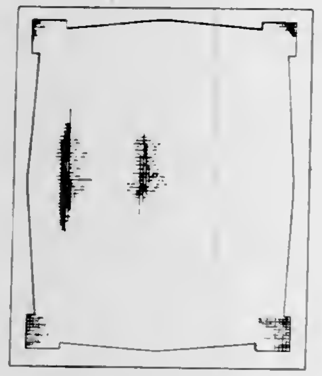
225,052
PANEL MEMBER FOR STORM AND SCREEN DOORS
Joseph F. Bovino, 1000 Jefferson Ave., Cherry Hill, N.J. 08034
Filed Dec. 24, 1969, Ser. No. 20,631
Term of patent 7 years
Int. Cl. D25—*02*
U.S. Cl. D13—1



225,053

PANEL MEMBER FOR STORM AND SCREEN DOORS

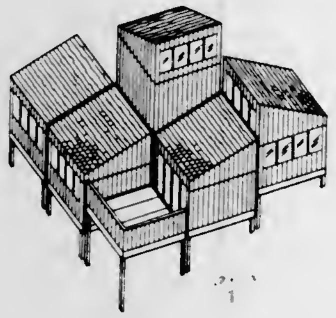
Joseph F. Bovino, 1000 Jefferson Ave.,
Cherry Hill, N.J. 08034
Filed Dec. 24, 1969, Ser. No. 20,635
Term of patent 7 years
Int. Cl. D25—*02*
U.S. Cl. D13—1



225,054

PRE-ASSEMBLED MODULAR HOUSING STRUCTURE

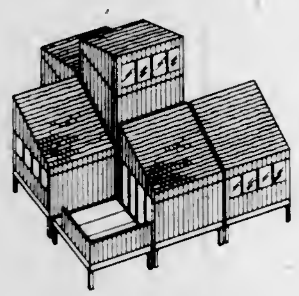
Edward D. Kelbish, 280 Vanderbilt Ave.,
New York, N.Y. 11025
Filed May 26, 1971, Ser. No. 147,301
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



225,055

PRE-ASSEMBLED MODULAR HOUSING STRUCTURE

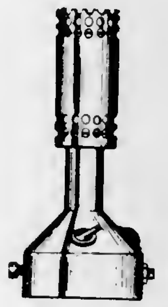
Edward D. Kelbish, 280 Vanderbilt Ave.,
New York, N.Y. 11025
Filed May 26, 1971, Ser. No. 147,304
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



225,056

ELECTRIC HEATER

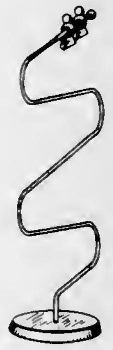
David N. Brooks, West Peabody, Mass., and Ronald E. Edin, Stratham, N.H., assignors to Sylvania Electric Products Inc.
Filed May 28, 1970, Ser. No. 23,185
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—77



225,057

VISUAL MANIPULATIVE COORDINATION TOY

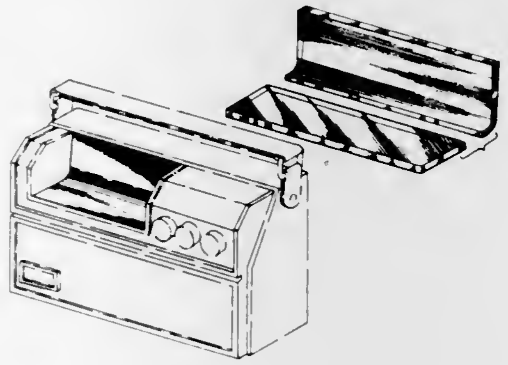
Eugene J. Majewski, 121 Elmore St.,
Park Ridge, Ill. 60068
Filed Mar. 16, 1971, Ser. No. 125,007
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1



225,058

TRANSVERSE RADIO TUNING INDICATOR FACE PLATE

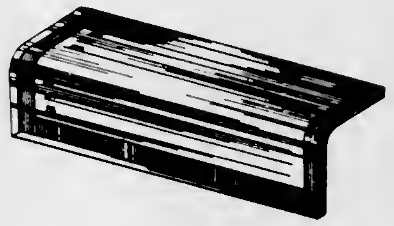
Maurice D. Katz, 35 Broadway, Lawrence, N.Y. 11559
Filed Mar. 12, 1971, Ser. No. 123,922
Term of patent 14 years
Int. Cl. D14—*03, 99*
U.S. Cl. D26—1



225,059

RADIO TUNING INDICATOR FACE PLATE

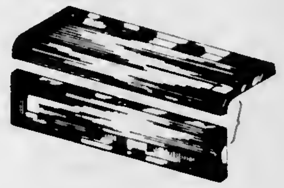
Maurice D. Katz, 35 Broadway, Lawrence, N.Y. 11559
Filed Mar. 12, 1971, Ser. No. 123,923
Term of patent 14 years
Int. Cl. D14—*03, 99*
U.S. Cl. D26—1

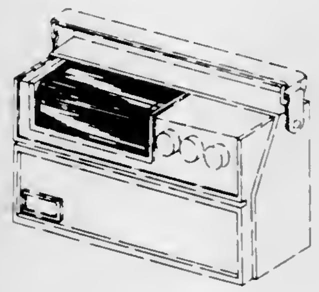


225,060

TRANSVERSE RADIO TUNING INDICATOR FACE PLATE

Maurice D. Katz, 35 Broadway, Lawrence, N.Y. 11559
Filed Mar. 12, 1971, Ser. No. 123,924
Term of patent 14 years
Int. Cl. D14—*03, 99*
U.S. Cl. D26—1

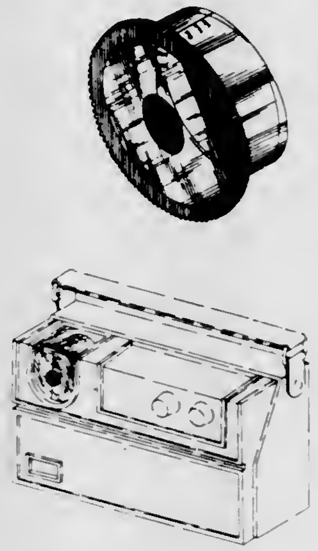




225,061

CIRCULAR RADIO TUNING FREQUENCY CONTROL WITH TRANSVERSE INDICATOR FACES

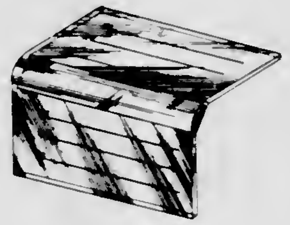
Maurice D. Katz, 35 Broadway, Lawrence, N.Y. 11559
Filed Mar. 12, 1971, Ser. No. 123,939
Term of patent 14 years
Int. Cl. D14—*03, 99*
U.S. Cl. D26—1

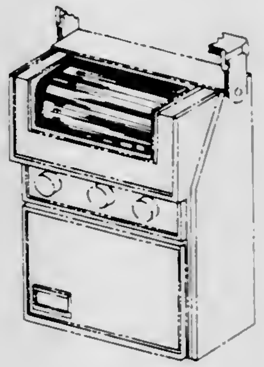


225,062

COMBINED MAGNIFIER AND RADIO TUNING INDICATOR

Maurice D. Katz, 35 Broadway, Lawrence, N.Y. 11559
Filed Mar. 12, 1971, Ser. No. 123,941
Term of patent 14 years
Int. Cl. D14—*03, 99*
U.S. Cl. D26—1

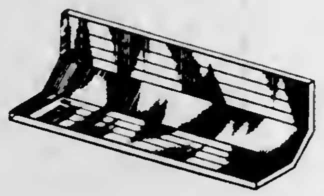


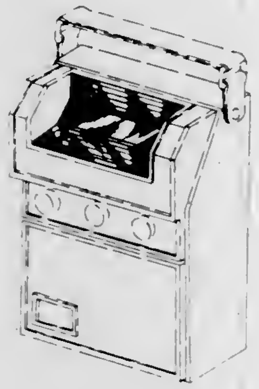


225,063
RADIO TUNING INDICATOR FACE PLATE

Maurice D. Katz, 35 Broadway, Lawrence, N.Y. 11559
Filed Mar. 12, 1971, Ser. No. 123,942
Term of patent 14 years
Int. Cl. D14—*03, 99*

U.S. Cl. D26—1

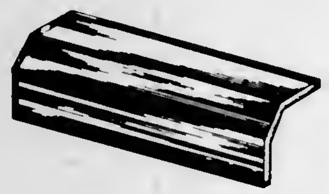


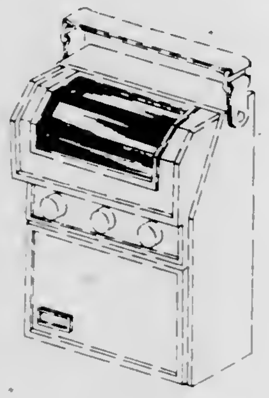


225,064
RADIO TUNING INDICATOR FACE PLATE

Maurice D. Katz, 35 Broadway, Lawrence, N.Y. 11559
Filed Mar. 12, 1971, Ser. No. 123,943
Term of patent 14 years
Int. Cl. D14—*03, 99*

U.S. Cl. D26—1

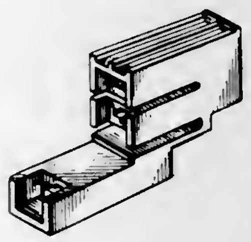




225,065
ELECTRICAL CONNECTOR HOUSING

Bruno Baumanis, River Forest, Ill., assignor to Molex Incorporated, Downers Grove, Ill.
Filed Apr. 1, 1971, Ser. No. 130,550
Term of patent 14 years
Int. Cl. D13—*03*

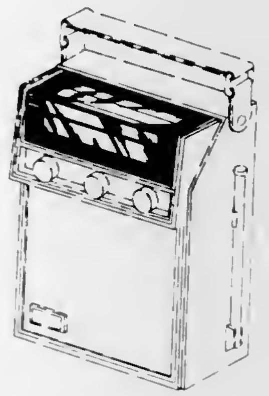
U.S. Cl. D26—1



225,066
PORTABLE RADIO DUAL TUNING FACE INDICATOR PLATE

Maurice D. Katz, 35 Broadway, Lawrence, N.Y. 11559
Filed May 18, 1971, Ser. No. 144,700
Term of patent 14 years
Int. Cl. D14—*03*

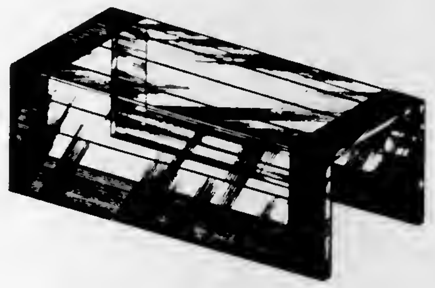
U.S. Cl. D26—1



225,067
THREE SIDED RADIO TUNING INDICATOR FACE PLATE

Maurice D. Katz, 35 Broadway, Lawrence, N.Y. 11559
Filed May 18, 1971, Ser. No. 144,702
Term of patent 14 years
Int. Cl. D14—*03, 99*

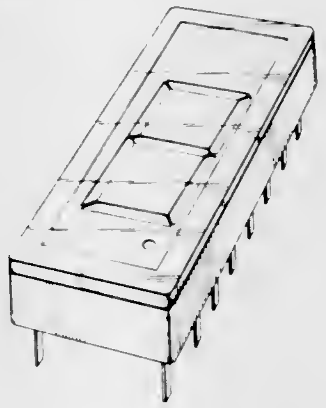
U.S. Cl. D26—1



225,068
NUMERAL INDICATOR FOR COMPUTERS OR THE LIKE

Hiroshi Higashida, 1-2, 4-chome, Sakurajyosui, Setagaya-ku, Tokyo, Japan
Filed May 11, 1971, Ser. No. 142,425
Claims priority, application Japan Nov. 11, 1970
Term of patent 14 years
Int. Cl. D13—*03*

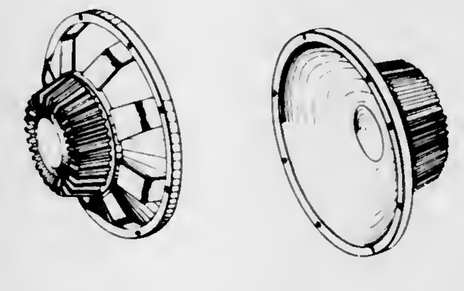
U.S. Cl. D26—5



225,069
AUDIO SPEAKER

Edmond A. May, La Canada, Calif., assignor to MCA Technology, Inc., Los Angeles, Calif.
Filed Oct. 21, 1970, Ser. No. 25,580
Term of patent 14 years
Int. Cl. D14—*01*

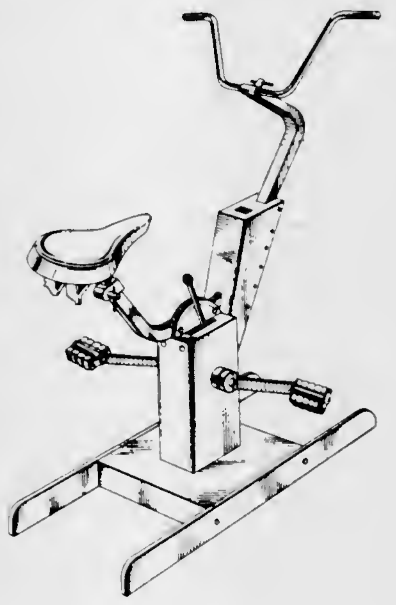
U.S. Cl. D26—14



225,070
BICYCLE EXERCISER

Richard I. Proctor, 3201 Orange Grove Ave., North Highlands, Calif. 95660
Filed Apr. 12, 1971, Ser. No. 133,465
Term of patent 14 years
Int. Cl. D21—*02*

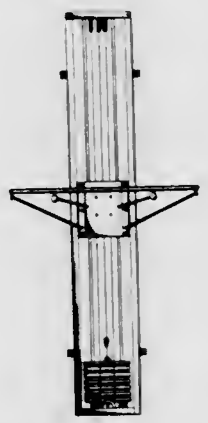
U.S. Cl. D34—5



225,071
EXERCISER OR SIMILAR ARTICLE

Richard I. Proctor, 3201 Orange Grove Ave., North Highlands, Calif. 95660
Filed Apr. 27, 1971, Ser. No. 138,015
Term of patent 14 years
Int. Cl. D21—*02*

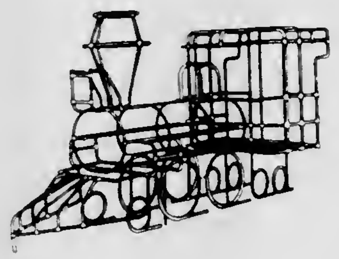
U.S. Cl. D34—5



225,072
PLAYGROUND CLIMBING BARS

Steven A. Henning and Philip G. Miller, Anderson, Ind., assignors to American Playground Device Co., Anderson, Ind.
Filed May 18, 1971, Ser. No. 144,697
Term of patent 14 years
Int. Cl. D21—*03*

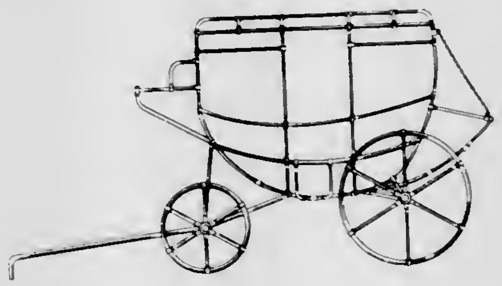
U.S. Cl. D34—5



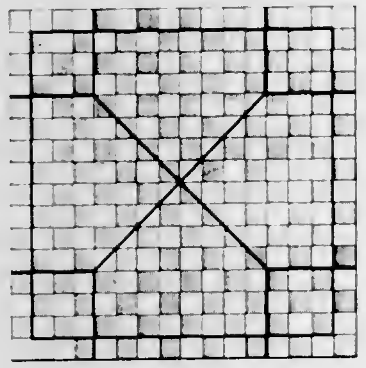
225,073
PLAYGROUND CLIMBING BARS

Steven A. Henning and Philip G. Miller, Anderson, Ind., assignors to American Playground Device Co., Anderson, Ind.
Filed May 19, 1971, Ser. No. 145,103
Term of patent 14 years
Int. Cl. D21—*03*

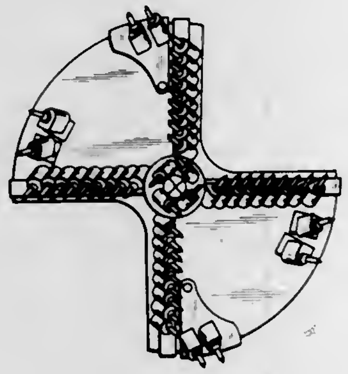
U.S. Cl. D34—5

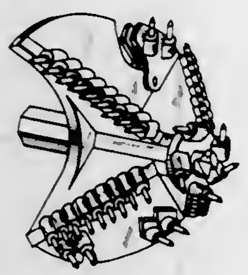


225,074
GAME BOARD
Robert W. Dervishian, Richmond, Va., assignor to Chess, Inc., Richmond, Va.
Filed July 29, 1971, Ser. No. 167,543
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5

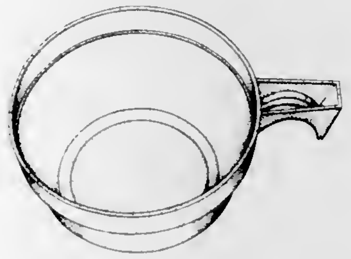


225,075
BORING AUGER FOR HORIZONTAL EARTH BORING MACHINES
Albert R. Richmond, West Salem, Ohio, assignor to The Richmond Manufacturing Company, Ashland, Ohio
Filed Aug. 6, 1970, Ser. No. 24,332
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D39—1

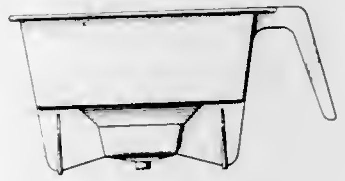




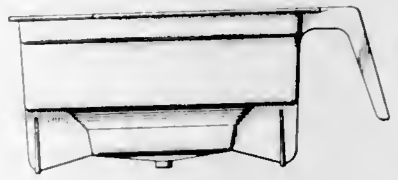
225,076
CUP
Karl Rune Persson, Halmstad, Sweden, assignor to Bila Cup AB, Halmstad, Sweden
Filed Sept. 22, 1970, Ser. No. 25,131
Claims priority, application Great Britain Mar. 23, 1970
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—9



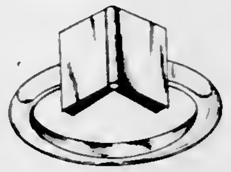
225,077
FUNNEL FOR PREPACKAGED COFFEE
John C. Martin and Edward J. Kniery, Springfield, Ill., assignors to Bunn-O-Matic Corporation, Springfield, Ill.
Filed Jan. 14, 1971, Ser. No. 106,639
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D44—26



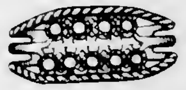
225,078
FUNNEL FOR PREPACKAGED COFFEE
John C. Martin and Edward J. Kniery, Springfield, Ill., assignors to Bunn-O-Matic Corporation, Springfield, Ill.
Filed Jan. 14, 1971, Ser. No. 106,640
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D44—26



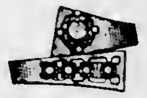
225,079
FINGER RING OR SIMILAR ARTICLE
Jean La Torre, 2720 Foster Ave., Brooklyn, N.Y. 11210
Filed June 7, 1971, Ser. No. 150,898
Term of patent 7 years
Int. Cl. D11—*01*
U.S. Cl. D45—10



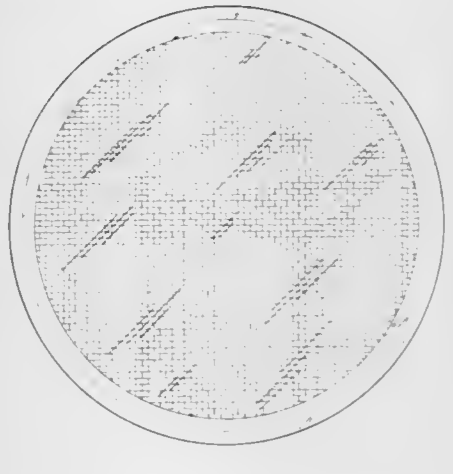
225,080
FINGER RING
Bernard I. Mechanic, 9314 Lincolnwood Drive, Evanston, Ill. 60202
Filed Jan. 22, 1971, Ser. No. 109,078
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10



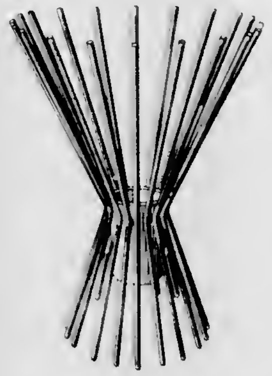
225,081
FINGER RING
Bernard I. Mechanic, 9413 Lincolnwood Drive, Evanston, Ill. 60202
Filed July 2, 1971, Ser. No. 159,586
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10



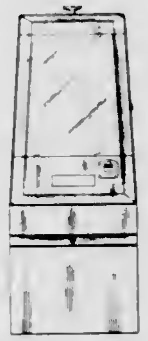
225,082
TRAFFIC SIGNAL LENS
John R. Miles, Glenview, Ill., assignor to Gulf + Western Industries, Inc., New York, N.Y.
Filed Feb. 8, 1971, Ser. No. 113,517
Term of patent 14 years
Int. Cl. D26—*06, 05*
U.S. Cl. D48—32



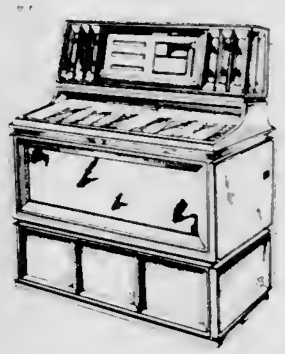
225,083
HEAD FOR A TIKI TORCH
James D. Reese, 11937 Avenue 274, Visalia, Calif. 93271
Filed Apr. 28, 1971, Ser. No. 138,380
Term of patent 14 years
Int. Cl. D26—*02, 05*
U.S. Cl. D48—24



225,084
VENDING MACHINE
Guy A. Morse, Jr., 2251 Poinciana Road, Winter Park, Fla. 32789
Filed Aug. 19, 1971, Ser. No. 173,356
Term of patent 7 years
Int. Cl. D20—*01*
U.S. Cl. D52—3

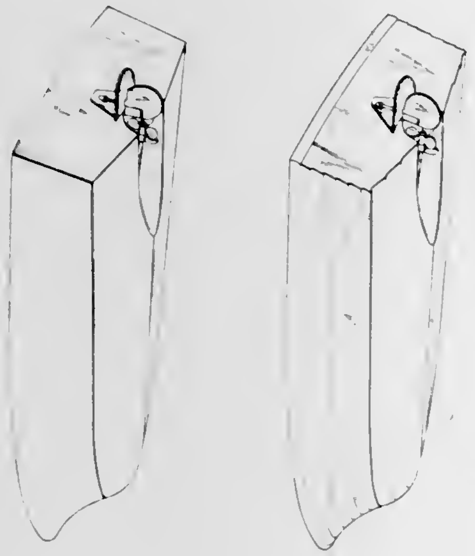


225,085
PHONOGRAPH
Melvin H. Boldt, Glenview, Ill., assignor to Rowe International Inc., Whippany, N.J.
Filed Feb. 22, 1971, Ser. No. 117,860
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4



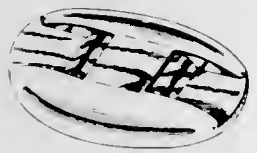
225,086
BOAT HULL

Robert B. Stuart, R.D. 4, Penn Yan, N.Y. 14527
Continuation-in-part of design application Ser. No. 14,307, Nov. 4, 1968. This application May 1, 1970, Ser. No. 22,781
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1



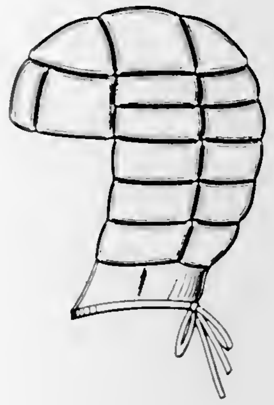
225,087
COMBINED REFLECTIVE HIGHWAY LANE DIVIDER AND ROAD MARKER

Dwight L. Haley, Tyler, Tex., assignor to Ferro Corporation, Cleveland, Ohio
Filed Feb. 24, 1971, Ser. No. 118,590
Term of patent 14 years
The portion of the term of the patent subsequent to Feb. 21, 1981, has been disclaimed
Int. Cl. D29—*02*
U.S. Cl. D72—1



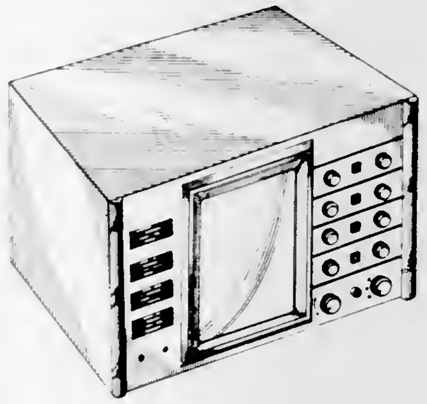
225,088
THERAPEUTIC CAP

Ashsha East, 7140 N. Federal, Westminster, Colo. 80030
Filed July 2, 1970, Ser. No. 23,802
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1



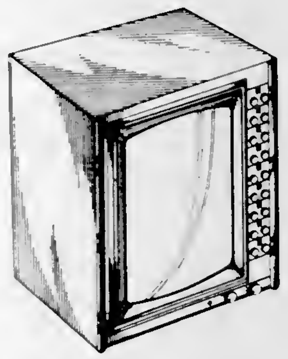
225,089
FOUR-CHANNEL MEDICAL CONDITION MONITOR

Lambert F. Lyons, 5132 White Oak Ave., Apt. 247, Los Angeles, Calif. 91316
Filed Dec. 15, 1970, Ser. No. 26,502
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1



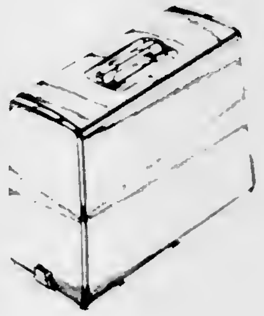
225,090
EIGHT-CHANNEL MEDICAL CONDITION MONITOR

Lambert F. Lyons, 5132 White Oak Ave., Apt. 247, Los Angeles, Calif. 91316
Filed Dec. 15, 1970, Ser. No. 26,503
Term of patent 7 years
Int. Cl. D24—*01*
U.S. Cl. D83—1



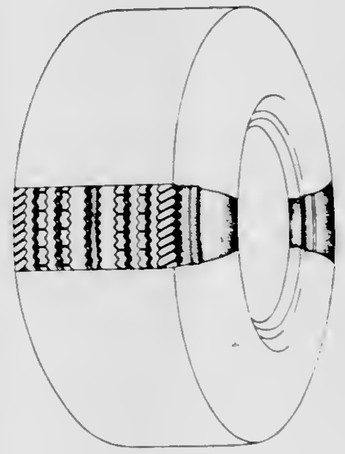
225,091
COMBINED CARRYING CASE ACCESSORY TRAY AND LID FOR A SEWING MACHINE OR SIMILAR ARTICLE

Robert S. Peets, Watchung, N.J., assignor to The Singer Company, New York, N.Y.
Filed Feb. 22, 1971, Ser. No. 117,588
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1



225,092
TIRE

Iain C. Mills, Sutton, England, assignor to Dunlop Holdings Limited, St. James, London, England
Continuation-in-part of design applications Ser. No. 22,172 and Ser. No. 22,173, both Apr. 1, 1970. This application Jan. 13, 1971, Ser. No. 106,320
Claims priority, application Great Britain Oct. 9, 1969; Oct. 17, 1969
Term of patent 7 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF NOVEMBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A-T-O, Inc.: *See—*
  - Stevenson, Louis A., Jr., 3,702,472.
- Abbott, Peter Charles Terence: *See—*
  - Raynor, Terence Robert; and Abbott, Peter Charles Terence, 3,702,455.
- Abrahamsson, Set Ingvar; and Perssons, Per Helge. Apparatus for removing rubber rings from a mold. 3,702,138, Cl. 214-1.00r.
- Adahan, Carmeli, to Singer Company, The. Keyboard assembly. 3,702,449, Cl. 335-206.000.
- Adams, George F., to Universal Oil Products Company. Para-xylene recovery and production. 3,702,347, Cl. 260-674.00a.
- Adams, Richard C.: *See—*
  - Price, Raymond E.; Tirrell, Clifford F.; Adams, Richard C.; and George, Robert W., 3,702,103.
- Adams, William S., to Westvaco Corporation. Compartmented pad. 3,702,170, Cl. 229-15.000.
- Addressograph-Multigraph Corporation: *See—*
  - Copeland, John S., 3,702,096.
- Aebi, Hans Riehen: *See—*
  - Martin, Henry; Aebi, Hans Riehen; and Ebner, Ludwig, 3,702,363.
- Aero-Flow Dynamics, Inc. (Wing Company Division, The): *See—*
  - Rohrs, Marvin K.; and Neary, Robert J., 3,702,156.
- Aerojet-General Corporation: *See—*
  - Hankins, Ronald A.; Culver, Donald W.; and Scammon, Harrison B., Jr., 3,702,174.
  - Hoffman, Lawrence C.; Rudnicki, Mark I.; and Williams, Howard W., 3,702,110.
- Ajinomoto Co., Inc.: *See—*
  - Ishida, Moriyoshi; Hori, Terutsugu; Otsuka, Yuzuru; Sato, Kunimitsu; Inoue, Katsuyuki; and Ogata, Yoshio, 3,702,341.
- Aker, John L.: *See—*
  - Alden, John R.; and Aker, John L., 3,702,475.
- Albertson, Nathan E. Wrench holder. 3,702,136, Cl. 211-60.00t.
- Alcan Research and Development Limited: *See—*
  - Bryson, Neil Burton, 3,702,152.
- Alcock, David Gerald: *See—*
  - Williams, Alun Trefor Rhys; and Alcock, David Gerald, 3,702,247.
- Alcock, David Gerald; Brown, John Colin; Piccotti, Enzo; and Iungius, Vorman John, to Ilford Limited. Bleach fix additives. 3,702,248, Cl. 96-22.000.
- Alden, John R.; and Aker, John L., to King Radio Corporation. Search-track decision circuit for distance measuring equipment. 3,702,475, Cl. 343-7.300.
- Aldrich Chemical Company, Inc.: *See—*
  - Li, Jorge Pengman; and Biel, John Hans, 3,702,327.
- Alecci, Donald E.: *See—*
  - Sinnott, David J.; and Alecci, Donald E., 3,702,094.
- Allergan Pharmaceuticals: *See—*
  - Boghosian, Malcolm P.; and Wilson, John W., Jr., 3,702,364.
- Alley, David W. Hitch or coupling pin. 3,702,198, Cl. 280-515.000.
- Allis-Chalmers Manufacturing Company: *See—*
  - Krutis, Edward V., 3,702,196.
- Altmann, Conrad, to Eastman Kodak Company. Image development station. 3,702,108, Cl. 118-637.000.
- Amana Refrigeration, Inc.: *See—*
  - Foerstner, Richard A., 3,702,386.
- American Hydrocarbon Company: *See—*
  - Selin, Clifford E.; Lyon, Lloyd B.; Holbrook, Stanford T.; and Hammond, Francis H., 3,702,340.
- American Optical Corporation: *See—*
  - Segre, Joseph P., 3,702,214.
- AMP Incorporated: *See—*
  - Patton, George Allen, 3,702,456.
  - Schor, Ferdinand William, 3,702,422.
- AMP Incorporated, mesne: *See—*
  - Raynor, Terence Robert; and Abbott, Peter Charles Terence, 3,702,455.
- Ampex Corporation: *See—*
  - Boblett, Emil V., 3,702,448.
- Anderson, Harold, Jr. Visual aid for trailer hitch. 3,702,029, Cl. 33-246.0as.
- Anderson, Norman Stewart, to Imperial chemical Industries, Limited. Nylon panels. 3,702,280, Cl. 161-160.000.
- Anikanov, Nikolai Ivanovich: *See—*
  - Dichinsky, Yakov Efimovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Zax, Grigory Iosilfovich; Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; and Frumkin, Mikhail Evseevich, 3,702,186.
- Antlfinger, George J.: *See—*
  - Knechtges, Donald P.; and Antlfinger, George J., 3,702,315.
- Aoki, Akira: *See—*
  - Kosaka, Kenzo; Tsunewaki, Masami; Tanaka, Hideo; and Aoki, Akira, 3,702,055.
- Arai, Hiroshi; Nakamura, Akira; Okamoto, Atutoshi; and Okumura, Shunji, to Toyota Jidosha Kogyo Kabushiki Kaisha and Nippondenso Kabushiki Kaisha. Anti-skid device for automotive vehicles. 3,702,205, Cl. 303-21.00a.
- Arai, Tadashi; Asano, Kiro; and Yamada, Jun, to Kureha Kagaku Kogyo Kabushiki. Production of graphite fibers. 3,702,054, Cl. 57-157.032.
- Archer, Alva I., to Honeywell Inc. Discretionary interconnection process. 3,702,025, Cl. 29-574.000.
- Ardary, Zane L.; and Sturgis, David H., to United States of America, Atomic Energy Commission. Fibrous thermal insulation and method for preparing same. 3,702,279, Cl. 161-170.000.
- Armistead, John M.; and Kosiba, Joseph K., to Gulf Oil Corporation. Apparatus for by-passing reactants to the interior of a catalyst bed. 3,702,238, Cl. 23-288.00r.
- Armstrong, Daniel A., to General Motors Corporation. Fluid pressure proportioning unit. 3,702,207, Cl. 303-22.00a.
- Arnold, Fred E., to United States of America, Air Force. Fused ring tetraamino compound the tetratosylate thereof, and their synthesis. 3,702,326, Cl. 260-250.00r.
- Arnold, Thomas B.; Byrnes, Eugene B.; and Castoe, Alonzo R., to Atlantic Richfield Company. Oil and gas treatment. 3,702,296, Cl. 208-341.000.
- Arntson, Gary L., to General Motors Corporation. Steering column assembly. 3,702,081, Cl. 74-492.000.
- Asano, Kiro: *See—*
  - Arai, Tadashi; Asano, Kiro; and Yamada, Jun, 3,702,054.
- Ashland Oil, Inc.: *See—*
  - Robins, Janis, 3,702,316.
- Associated Electrical Industries Limited: *See—*
  - Lucas, Jeffrey Harvey, 3,702,399.
- Atlantic Richfield Company: *See—*
  - Arnold, Thomas B.; Byrnes, Eugene B.; and Castoe, Alonzo R., 3,702,296.
  - Fritok, William H.; Wolgemuth, Larry G.; and Strand, Robert C., 3,702,320.
- Atlas Pacific Engineering Company: *See—*
  - Loveland, Malcolm W., 3,702,144.
- Aurora Equipment Co.: *See—*
  - Evans, Robert J., 3,702,137.
- Avco Corporation: *See—*
  - O'Connor, William M., 3,702,140.
  - Watkins, Sidney C., 3,702,175.
- Avery, Robert T.; Lambertson, Glen R.; and Pike, Chester D., to United States of America, Atomic Energy Commission. Printed circuit steering coils. 3,702,450, Cl. 335-213.000.
- Bachhuber, Theodore J. Shotgun shell reloader with sizing die and ejector. 3,702,089, Cl. 86-32.000.
- Bagwell, Benjamin J.: *See—*
  - Callender, Jack E.; Halbedel, Don Edward; Bagwell, Benjamin J.; Horning, James Leroy; Lissakers, Erik Axel; Long, Joseph Harold; and Schweitzer, Cameron C., 3,702,381.
- Baignol & Farjon S. A.: *See—*
  - Farjon, Raymond; Farce, Jacques; Florent, Jacques; and Dumoulin, Michel, 3,702,314.
- Baker, Charles P., Jr., to Omark Industries, Inc. Method of lining metallic walled carriers. 3,702,024, Cl. 29-407.000.
- Baldwin, Eual E. Rice oil-containing composition for use as cutting, penetrating or lubricating oil. 3,702,301, Cl. 252-56.00s.
- Balinski, Henry A., to United States Gypsum Company. Cavity shaft wall. 3,702,044, Cl. 52-30.000.
- Bannister, Brian, to Upjohn Company, The. Derivatives of lincomycin and its analogs and process. 3,702,322, Cl. 260-210.00r.
- Barker, Thomas B.: *See—*
  - Clemens, Carl F.; and Barker, Thomas B., 3,702,303.
- Bartlett, Ronald Leonard: *See—*
  - Blake, Paul Desmond; Johnston, Roy Douglas; Phelps, Brian; Chapman, Edwin Albert; and Bartlett, Ronald Leonard, 3,702,390.
- Bauchan, Michael L., to General Motors Corporation. Vehicle deceleration circuit. 3,702,459, Cl. 340-62.000.
- Bauer, Erich; Reichard, Franz; and Schwarz, Ferdinand, to Osterreichische Mineralolverwaltung Aktiengesellschaft. Process for the utilization of the energy content of the flue gas accrued in catalytic cracking plants. 3,702,308, Cl. 252-417.000.
- Beard, William Q., Jr., to Ethyl Corporation. Halodehydrogenation catalyst. 3,702,311, Cl. 252-441.000.

- Beatenbough, Paul K.; and Scherer, Carl A., to General Motors Corporation. Automatic expansion valve, in line, piloted. 3,702,066, Cl. 62-222.000.
- Beaunit Corporation: *See—*
  - Dale, Edwin L., 3,702,231.
  - Jayne, Clarence V.; Regep, Gazie K.; and Templeton, James D., 3,702,260.
- Bednar, David H., to Viking Explosives & Supply Inc. Hydraulically operated system for subsurface operations. 3,702,223, Cl. 417-375.000.
- Beets, Muus G. J.; and van Essen, Harm, to International Flavors & Fragrances Inc. 2-Methyl-2-(tertiary alkyl cyclohexyl) pentan-4-ones and processes. 3,702,343, Cl. 260-586.00b.
- Bell, Gunter: *See—*
  - Kuhn, Max; Bell, Gunter; and Watermann, Willy, 3,702,061.
- Bell Telephone Laboratories, Inc.: *See—*
  - Fuss, Peter Siegfried, 3,702,393.
  - McGahey, Bruce Hamilton; and West, John Wesley, 3,702,439.
- Bennett, Fay M.: *See—*
  - Phillips, Cecil E.; Bennett, Fay M.; and Larson, Robert L., 3,702,188.
- Bennett, Samuel M. Toilet tank flush valves. 3,702,012, Cl. 4-57.00p.
- Berg Electronics, Inc.: *See—*
  - Brubaker, Weldon L., 3,702,104.
- Bernales, Benjamin C., to Westinghouse Electric Corporation. Rotor blade structure. 3,702,222, Cl. 416-212.000.
- Betts, Max William; and Robinson, Frank, to Courtland Limited. Knitting method. 3,702,068, Cl. 66-176.000.
- Bex, Lucien; Faure, Jean; and Vienet, Roger. Ion source having a uniform radial density. 3,702,416, Cl. 315-111.000.
- Biegler, Warren H.: *See—*
  - Rabon, James L.; Biegler, Warren H.; and Kelly, Ramond E., 3,702,014.
- Biel, John Hans: *See—*
  - Li, Jorge Pengman; and Biel, John Hans, 3,702,327.
- Biernat, Raymond W.: *See—*
  - Morley, Ronald I.; Biernat, Raymond W.; and Smidt-Hayer, Arnold J., 3,702,400.
- Big Dutchman, Inc.: *See—*
  - Van Huis, Robert L., 3,702,109.
- Birts, Leslie; and Challender, Ronald Scott, to United Kingdom Atomic Energy Authority. Removal of heat from a nuclear reactor under emergency conditions. 3,702,281, Cl. 176-37.000.
- Bizerba-Werke Wilhelm Kraut KG: *See—*
  - Muller, Ernst; and Maurer, Albrecht, 3,702,150.
- Blake, Paul Desmond; Johnston, Roy Douglas; Phelps, Brian; Chapman, Edwin Albert; and Bartlett, Ronald Leonard, to Murex Welding Processes Limited. Arc welding. 3,702,390, Cl. 219-146.000.
- Blanchard, Eugene J.; Gautreaux, Gloria A.; and Harper, Robert J., Jr., to United States of America, Agriculture. Use of a polymer additive to improve the optical brightener absorption characteristics of durable-press fabrics. 3,702,230, Cl. 8-100.000.
- Blatt, Leland F. Cylinder operated power clamp. 3,702,185, Cl. 269-32.000.
- Bloch, Walter; and Stevens, Christopher Richard, to Bowthorpe-Hellermann Limited. Spacer-damper for electrical power lines. 3,702,371, Cl. 174-42.000.
- Blockley, Walter Vincent. Electrode apparatus for exercisor handlebar. 3,702,113, Cl. 128-2.06e.
- Bloom, Stanley M.; Borror, Alan L.; Huyffer, Paul S.; and Macgregor, Paul T., to Polaroid Corporation. Diffusion transfer photographic processes and elements utilizing pH-sensitive agents to prevent fogging by extraneous actinic radiation during developmen. 3,702,244, Cl. 96-3.000.
- Blose, John B. Communications system for electric power utility. 3,702,460, Cl. 340-150.000.
- Blum, Conrad C., to Bommer Spring Hinge Co., Inc. Hold open assembly for checking floor hinge. 3,702,015, Cl. 16-55.000.
- Boblett, Emil V., to Ampex Corporation. Impedance matched ultrasonic delay line wherein electrodes consist of bismuth and indium. 3,702,448, Cl. 333-30.00r.
- Bocian, Harvey: *See—*
  - Marshall, Edwin L.; Bocian, Harvey; and Hauptman, Neil L., 3,702,027.
- Bodenseewerk Perkin-Elmer & Co., GmbH: *See—*
  - Braun, Klaus; Manthey, Kurt; and Welz, Bernhard, 3,702,219.
- Boehringer, C. H., Sohn: *See—*
  - Ost, Walter; Thomas, Klaus; and Jerchel, Dietrich, 3,702,344.
- Boeing Company, The: *See—*
  - Schmitt, Hubert A., 3,702,087.
  - Schmitt, Hubert A., 3,702,088.
- Bogenberger, Richard; Busch, Heinz F. K.; Kroy, Walter; and Mehnert, Walter E., to Messerschmitt-Bolkow-Blohm GmbH. Method for transmitting television-compatible video and audio information by means of audio frequency and device for practicing the method. ,702,378, Cl. 178-5.80r.
- Boghosian, Malcolm P.; and Wilson, John W., Jr., to Allergan Pharmaceuticals. Stabilized chloramphenicol composition. 3,702,364, Cl. 424-324.000.
- Bogner, Philip W.: *See—*
  - Carothers, Charles H.; and Bogner, Philip W., 3,702,419.
- Bommer Spring Hinge Co., Inc.: *See—*
  - Blum, Conrad C., 3,702,015.
- Bonneville, Gerald D.; Hetke, Adolf; and Free, William N., to General Motors Corporation. Friction welder with floating workpiece fixture. 3,702,169, Cl. 228-2.000.
- Borror, Alan L.: *See—*
  - Bloom, Stanley M.; Borror, Alan L.; Huyffer, Paul S.; and Macgregor, Paul T., 3,702,244.
- Borthwick, Theodore H. Cigarette. 3,702,117, Cl. 131-4.00a.
- Bower, Kenneth W.; and Jennings, Lewis F., to Varco Incorporated. Static eliminator. 3,702,417, Cl. 317-2.00f.
- Bowman, Wayne A., to Eastman Kodak Company. Photographic element comprising amine containing polymers. 3,702,249, Cl. 96-84.00r.
- Bowthorpe-Hellermann Limited: *See—*
  - Bloch, Walter; and Stevens, Christopher Richard, 3,702,371.
- Braden Steel Corporation: *See—*
  - Lewis, James C.; Lewis, Scott C.; and Hockett, Robert M., 3,702,046.
- Brannan, Mary Ann F.: *See—*
  - Roberts, Earl J.; Brannan, Mary Ann F.; and Rowland, Stanley P., 3,702,232.
- Braun, Klaus; Manthey, Kurt; and Welz, Bernhard, to Bodenseewerk Perkin-Elmer & Co., GmbH. Graphite tube cell assemblies for atomic absorption spectrometers. 3.702,219, Cl. 356-244.000.
- Breed, Laurence W.; Elliott, Richard L.; and Rosenberg, Harold, to United States of America, Air Force, mesne. Method of making arylene modified siloxazanes incorporating cyclodisilazane structures. 3,702,317, Cl. 260-465.00p.
- Breikss, Ivars P., to Honeywell, Inc. Frequency divider. 3,702,382, Cl. 179-100.20r.
- Breil, Heinz: *See—*
  - Ziegler, Karl; and Breil, Heinz, 3,702,309.
- British Cast Iron Research Association: *See—*
  - Leyshon, Hemphrey James, 3,702,182.
- Broderick, John E., to Martin-Marietta Corporation. Apparatus for contouring a honeycomb core. 3,702,072, Cl. 72-307.000.
- Brooks, Geoffrey N.; and Crompton, John L. F., to Dunlop Company Limited, The. Assemblies of tubular members. 3,702,199, Cl. 285-55.000.
- Brown, Horace D., to Montec Corporation. Ambient compensated time delay switch. 3,702,454, Cl. 337-77.000.
- Brown, John Colin: *See—*
  - Alcock, David Gerald; Brown, John Colin; Piccotti, Enzo; and Iungius, Vorman John, 3,702,248.
- Brown, Joseph M.: *See—*
  - Sawyer, Elbert M.; Brown, Joseph M.; Munden, Curtis D.; and Giles, Kenneth E., 3,702,429.
- Brown, Robert G., to Iowa State University Research Foundation, Inc. Inertial/doppler-satellite navigation system. 3,702,477, Cl. 343-112.00c.
- Browning, Charles E., to United States of America, Air Force. Thermally stable heterocyclic anthraquinone polyimides and method for their synthesis. 3,702,318, Cl. 260-47.0cp.
- Brubaker, Weldon L., to Berg Electronics, Inc. Method of manufacture for wire grip terminal. 3,702,104, Cl. 113-119.000.
- Brugmans, Johannes Thomas: *See—*
  - Schoots, Peter J.; Brugmans, Johannes Thomas; and Hoogenhout, Klaas, 3,702,053.
- Brunswick Corporation: *See—*
  - Thompson, Robert C., 3,702,149.
- Bryden, Joseph E., to Raytheon Company. Constant writing rate character generation and display system. 3,702,470, Cl. 340-324.00a.
- Bryson, Neil Burton, to Alcan Research and Development Limited. Procedures and apparatus for continuous casting of metal ingots. 3,702,152, Cl. 164-89.000.
- Buckley, Bruce Robert Ashworth: *See—*
  - Welbourn, Donald Burkewood; Smith, James Derek; and Buckley, Bruce Robert Ashworth, 3,702,043.
- Burich, William James, to Du Pont de Nemours, E. I., and Company. Composite hydrocarbon refinery apparatus and process arrangement. 3,702,292, Cl. 208-80.000.
- Busch, Heinz F. K.: *See—*
  - Bogenberger, Richard; Busch, Heinz F. K.; Kroy, Walter; and Mehnert, Walter E., 3,702,378.
- Busi, Ettore. Machine for the deposition of measured amounts of softened thermoplastic material into closure caps. 3,702,148, Cl. 141-67.000.
- Byars, John C. Electrical connector for coupling an external receiver to a mobile whip antenna. 3,702,480, Cl. 343-715.000.
- Byrnes, Eugene B.: *See—*
  - Arnold, Thomas B.; Byrnes, Eugene B.; and Castoe, Alonzo R., 3,702,296.
- Callender, Evelyn N.: *See—*
  - Callender, Jack E.; Halbedel, Don Edward; Bagwell, Benjamin J.; Horning, James Leroy; Lissakers, Erik Axel; Long, Joseph Harold; and Schweitzer, Cameron C., 3,702,381.
- Callender, Jack E.; deceased (by Callender, Evelyn N.; administratrix); Halbedel, Don Edward; Bagwell, Benjamin J.; Horning, James Leroy; Lissakers, Erik Axel; Long, Joseph Harold; and Schweitzer, Cameron C., to North Electric Company. Telephone switching ystem including toll service desk. 3,702,381, Cl. 179-27.0ff.
- Cambridge Scientific Instruments Limited: *See—*
  - Van-Essen, Christopher Geoffrey; Schulson, Erland Maxwell; and Donaghay, Richard Hugh, 3,702,398.

- Campana, Eugene E., to Ciba-Geigy Corporation. Printing of anionic dyes on polycarbonamides of bis (para-aminocyclohexyl)methane and dodecanedioic acid. 3,702,229, Cl. 8-62.000.
- Cantwell, Gill, to Century Data Systems, Inc. Disk file gimbal head mount. 3,702,461, Cl. 340-174.10e.
- Capachietti, Alfred J., Sr.; and Capriotti, Daniel P., Sr. Signal device to indicate malfunction of vehicle clutch. 3,702,458, Cl. 340-52.00r.
- Capriotti, Daniel P., Sr.: *See—*
  - Capachietti, Alfred J., Sr.; and Capriotti, Daniel P., Sr., 3,702,458.
- Carlson, Carl W.: *See—*
  - De Corso, Serafino M.; and Carlson, Carl W., 3,702,058.
- Carman, Kenneth K., to Koppers Company, Inc. Hub-to-shaft connector and method for couplings. 3,702,200, Cl. 287-52.050.
- Carothers, Charles H.; and Bogner, Philip W., to Westinghouse Electric Corporation. Lightning arrester with pressure relief means. 3,702,419, Cl. 317-61.000.
- Carow, Robert N.; and Libit, Sidney M., to U.S. Cap & Closure, Inc. Child-proof dispensing closures. 3,702,165, Cl. 222-153.000.
- Carrier Corporation: *See—*
  - Young, Robert L.; Wood, Russell E.; Farney, Samuel D.; and Hogan, Arnold U., 3,702,211.
- Cassanelli, Robert R.; Wauters, Ronald P.; Wirchansky, Anastasia C.; and Wyss, Clement R., to General Foods Corporation. Multi-layered starch-containing dessert. 3,702,254, Cl. 99-139.000.
- Castoe, Alonzo R.: *See—*
  - Arnold, Thomas B.; Byrnes, Eugene B.; and Castoe, Alonzo R., 3,702,296.
- Castrucci, Paul P., to International Business Machines Corporation. Information card. 3,702,464, Cl. 340-173.0sp.
- Causey, G. E.: *See—*
  - Sellers, Aubrey G., 3,702,197.
- C.A.V. Limited: *See—*
  - Welbourn, Donald Burkewood; Smith, James Derek; and Buckley, Bruce Robert Ashworth, 3,702,043.
- Celanese Corporation: *See—*
  - Trotter, Frederick J., Jr., 3,702,128.
- Century Data Systems, Inc.: *See—*
  - Cantwell, Gill, 3,702,461.
- Chaffin, Chester C. Apparatus for handling carpet rolls. 3,702,139, Cl. 214-38.00c.
- Challender, Ronald Scott: *See—*
  - Birts, Leslie; and Challender, Ronald Scott, 3,702,281.
- Chapman, Edwin Albert: *See—*
  - Blake, Paul Desmond; Johnston, Roy Douglas; Phelps, Brian; Chapman, Edwin Albert; and Bartlett, Ronald Leonard, 3,702,390.
- Chatterjee, Anil K.: *See—*
  - Stookey, Kenneth W.; and Chatterjee, Anil K., 3,702,039.
- Chemcraft Incorporated: *See—*
  - Hayden, William G., 3,702,355.
- Chemische Werke Huels, A.G.: *See—*
  - Grasemann, Horst, 3,702,319.
- Chemische Werke Huls Aktiengesellschaft: *See—*
  - Nehring, Rudolf; Hockele, Gunter; and Ludwig, Gerhard, 3,702,348.
- Chevron Research Company: *See—*
  - Kohn, Gustave K., 3,702,366.
- Chippawa, John Bell, to Norton Company. Silicon carbide furnace. 3,702,369, Cl. 13-20.000.
- Chrysler United Kingdom Limited: *See—*
  - Duke, Anthony John; and Dagley, Horace John, 3,702,022.
  - Wolfe, John Anthony Bartlam; and Clark, John Edwin Frederick, 3,702,021.
- Church, Nathan Lewis, to International Nickel Company, The. Ultra high strength ductile iron. 3,702,269, Cl. 148-35.000.
- Ciba-Geigy AG: *See—*
  - Martin, Henry; Aebi, Hans Riehen; and Ebner, Ludwig, 3,702,363.
- Ciba-Geigy Corporation: *See—*
  - Campana, Eugene E., 3,702,229.
- Cincinnati Milacrom, Inc.: *See—*
  - Decker, Jacob, 3,702,082.
- Ciolli, Henry J., to General Motors Corporation. Air conditioning pump shutoff. 3,702,064, Cl. 62-158.000.
- Cities Service Oil Company: *See—*
  - Fallgatter, Wayne S., 3,702,235.
- Clark Equipment Company: *See—*
  - Zachary, Ralph K.; and Luoma, John F., 3,702,161.
- Clark, John Edwin Frederick: *See—*
  - Wolfe, John Anthony Bartlam; and Clark, John Edwin Frederick, 3,702,021.
- Clemens, Carl F.; and Barker, Thomas B., to Xerox Corporation. Cleaning of photoconductive insulating surfaces. 3,702,303, Cl. 252-163.000.
- Cochran, Thomas J.; Coughlin, Charles P.; Ficker, Walter W.; Lent, Charles V.; and Sullivan, Joseph M., to International Business Machines. Abrading apparatus. 3,702,042, Cl. 51-8.000.
- Coffee, Ralph E.: *See—*
  - Mc Donnell, Thomas F.; and Coffee, Ralph E., 3,702,272.
- Cole, Everett N., Jr., to Consolidated Design, Inc. Diode tester. 3,702,438, Cl. 324-158.00f.
- Coleman, Kelly R. Display device. 3,702,033, Cl. 40-129.00r.
- Coleman, Lester E., to Lubrizol Corporation, The. Lubricant containing nitrogen-containing ester. 3,702,300, Cl. 252-51.50a.
- Colling, Ronald L.; and Trenne, Myron U., to General Electric Corporation. Electronic push button sequencer. 3,702,424, Cl. 317-140.000.
- Columbia Broadcasting System, Inc.: *See—*
  - Owen, Thomas P., 3,702,444.
- Columbia Broadcasting Systems, Inc.: *See—*
  - Zilius, Tadas; and Simboli, Joseph, 3,702,191.
- Combustion Engineering, Inc.: *See—*
  - Fernandes, John Henry, 3,702,242.
- Compagnie Generale d'Electricite: *See—*
  - Destree, Rene, 3,702,411.
  - Ecomard, Jean-Francois; and Maldy, Jacques, 3,702,373.
- Consolidated Design, Inc.: *See—*
  - Cole, Everett N., Jr., 3,702,438.
- Coodings, Anthony; and Leake, John Walgate, to United Kingdom Atomic Energy Authority. Neutron counter filled with boron trifluoride gas. 3,702,409, Cl. 313-61.00d.
- Cooper, James A., to United States of America, Atomic Energy Commission. Electrical surge diverting connector. 3,702,420, Cl. 317-61.000.
- Copeland, John S., to Addressograph-Multigraph Corporation. Copy apparatus. 3,702,096, Cl. 95-89.00r.
- Correa, Jose A.: *See—*
  - Dulmage, Howard T.; Correa, Jose A.; and Martinez, Adelaido J., 3,702,359.
- Coughlin, Charles P.: *See—*
  - Cochran, Thomas J.; Coughlin, Charles P.; Ficker, Walter W.; Lent, Charles V.; and Sullivan, Joseph M., 3,702,042.
- Courtland Limited: *See—*
  - Betts, Max William; and Robinson, Frank, 3,702,068.
- Cricchi, James R., to Westinghouse Electric Corporation. Electro-optic mass memory. 3,702,465, Cl. 340-173.0lt.
- Crompton, John L. F.: *See—*
  - Brooks, Geoffrey N.; and Crompton, John L. F., 3,702,199.
- Culver, Donald W.: *See—*
  - Hankins, Ronald A.; Culver, Donald W.; and Scammon, Harrison B., Jr., 3,702,174.
- Culver, William Harry, to Pennsalt Chemicals Corporation. Corrosion protection of buried metal objects. 3,702,262, Cl. 117-121.000.
- Cumming, James Deans. Resin-bonded expansion shell. 3,702,060, Cl. 61-45.00b.
- Cummins, Stewart E. Electron beam controlled bistable ferroelectric light valve. 3,702,215, Cl. 350-150.000.
- Cynober, Simon A.: *See—*
  - Ricaud, Pierre A.; and Cynober, Simon A., 3,702,099.
- Dagley, Horace John: *See—*
  - Duke, Anthony John; and Dagley, Horace John, 3,702,022.
- Dale, Edwin L., to Beaunit Corporation. Knitted textile materials comprising polyester fiber and having outstanding soil release and durable press properties and a process for the preparation thereof. 3,702,231, Cl. 8-115.600.
- Darby, John P.: *See—*
  - Kim, Heung T.; and Darby, John P., 3,702,226.
- Dart Industries Inc.: *See—*
  - Leibson, Irving, 3,702,352.
- Davidson, Donald R.; and Wilson, Edmund B., III, to Singer Company, The. Selectable bobbin thread tensions. 3,702,102, Cl. 112-184.000.
- De Blok, Jan F.; and Jansse, Leonard, to Koninklijke Nederlandsche Hoogovens en Staalfabrieken N. V. Method for deoxidizing effervescent steel. 3,702,151, Cl. 164-57.000.
- De Corso, Serafino M.; and Carlson, Carl W., to Westinghouse Electric Corporation. Double wall combustion chamber. 3,702,058, Cl. 60-39.650.
- Decker, Jacob, to Cincinnati Milacrom, Inc. Balancing device for roataing members. 3,702,082, Cl. 74-573.000.
- Deines, John. Independently operable dual drive wheel riding power mower. 3,702,051, Cl. 56-11.300.
- Delaware SDS, Inc., mesne: *See—*
  - England, Alfred W., 3,702,462.
- Dellioca, Conrad J.: *See—*
  - Learn, Arthur J.; Shepherd, William H.; and Dellioca, Conrad J., 3,702,427.
- Derrien, Michel: *See—*
  - Jacquin, Yves; and Derrien, Michel, 3,702,291.
- Destree, Rene, to Compagnie Generale d'Electricite. Spark arrester. 3,702,411, Cl. 313-198.000.
- Deutsche Gold- und Silber-Scheideanstalt vormal Roessler: *See—*
  - Vollbrecht, Heinz-Rudiger, 3,702,367.
- Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
  - Knorre, Helmut; and Meyer-Simon Eugen, 3,702,285.
  - Thiele, Kurt, 3,702,365.
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- Dixie-Narco, Inc.: *See—*

  - Oden, Kenneth W., 3,702,164.
- Dolcimascolo, Charles; Hoffman, Daniel S.; Jones, Hugh L.; and Mercik, James E., to Xerox Corporation. Bias roll transfer. 3,702,482, Cl. 346-74.0es.
- Donaghay, Richard Hugh: *See—*
  - Van-Essen, Christopher Geoffrey; Schulson, Erland Maxwell; and Donaghay, Richard Hugh, 3,702,398.
- Doring, Erich. Sound carrier and reproducing device for use with instruction books and the like. 3,702,032, Cl. 35-8.00a.
- Dow Chemical Company, The: *See—*
  - Merlino, Thomas R.; Flickinger, John H.; and McFadden, Russell T., 3,702,349.
- Dresser Industries, Inc.: *See—*
  - Wetterhorn, Richard H., 3,702,141.
- Du Pont de Nemours, E. I., and Company: *See—*
  - Burich, William James, 3,702,292.
  - Erinjeri, Antony J., 3,702,288.
  - Grot, Walther Gustav, 3,702,267.
  - Klabunde, Ulrich, 3,702,336.
- Ducret, Jacques: *See—*
  - Pillon, Daniel; and Ducret, Jacques, 3,702,332.
- Duddy, Joseph C., to ESB Incorporated. Method for processing pasted lead acid battery plates. 3,702,266, Cl. 136-33.000.
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- Dummer, Richard S.: *See—*
  - Wellnitz, Jerry N.; and Dummer, Richard S., 3,702,391.
- Dumoulin, Michel: *See—*
  - Farjon, Raymond; Farce, Jacques; Florent, Jacques; and Dumoulin, Michel, 3,702,314.
- Dunkl, Franz S.: *See—*
  - Ross, Sidney D.; Dunkl, Franz S.; and Finkelstein, Manuel, 3,702,426.
- Dunlop Company Limited, The: *See—*
  - Brooks, Geoffrey N.; and Crompton, John L. F., 3,702,199.
- Dye, Charles M., Jr.: *See—*
  - Rainsberger, Paul J.; and Dye, Charles M., Jr., 3,702,394.
- Dymo Industries, Inc.: *See—*
  - Morley, Ronald I.; Biernat, Raymond W.; and Smidt-Hayer, Arnold J., 3,702,400.
- Eastman Kodak Company: *See—*
  - Altmann, Conrad, 3,702,108.
  - Bowman, Wayne A., 3,702,249.
  - Gibbons, Carl B.; Kerr, William C.; and Maddocks, Roger H., 3,702,258.
  - Hooker, Richard, III, 3,702,275.
  - Hunter, Walker F.; and McCabe, John M., 3,702,250.
  - Kindig, Guilford Edwin, 3,702,095.
  - Moss, Donald R., 3,702,086.
  - Smith, Edward W., Jr., 3,702,357.
  - Sukel, Gerald J., 3,702,406.
- Ebner, Ludwig: *See—*
  - Martin, Henry; Aebi, Hans Riehen; and Ebner, Ludwig, 3,702,363.
- Eburn, William H., Jr., to Grace, W. R., & Co. Mounting for thin printing plates. 3,702,098, Cl. 101-415.100.
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- Eco Sciences, Inc., mesne: *See—*
  - Zsoldos, Frank J., Jr.; and Kowalski, Anna, 3,702,298.
- Ecomard, Jean-Francois; and Maldy, Jacques, to Compagnie Generale d'Electricite. Intrinsically stable superconductive conductor. 3,702,373, Cl. 174-126.0cp.
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- Eldridge, Judson B.: *See—*
  - Diebold, James P.; and Eldridge, Judson B., 3,702,354.
- Elisofon, Barry A.; and Elisofon, Judith. Door locking mechanism. 3,702,201, Cl. 292-338.000.
- Elisofon, Judith: *See—*
  - Elisofon, Barry A.; and Elisofon, Judith, 3,702,201.
- Elliott, Richard L.: *See—*
  - Breed, Laurence W.; Elliott, Richard L.; and Rosenberg, Harold, 3,702,317.
- Emerson Electric Co.: *See—*
  - Klein, Leo I., 3,702,387.
- Endo, Yoshitaka; Tomiyama, Katsumi; and Takanashi, Yasushi, to Mitsubishi Kenki Kabushiki Kaisha. Electric power control device. 3,702,435, Cl. 323-22.0sc.
- Energy Sciences, Inc.: *See—*
  - Quintal, Bertram S., 3,702,412.
- England, Alfred W., to Delaware SDS, Inc., mesne. Computer input-output system. 3,702,462, Cl. 340-172.500.
- Erinjeri, Antony J., to Du Pont de Nemours, E. I., and Company. Process for finishing metal substrates by electrodepositing a primer composition and acrylic organosol coating composition. 3,702,288, Cl. 204-181.000.
- ESB Incorporated: *See—*
  - Duddy, Joseph C., 3,702,266.
- Esposito, Raymond G. Paint remover compositions. 3,702,304, Cl. 251-171.000.
- Esso Research and Engineering Company: *See—*
  - Mullen, John S., 3,702,074.
  - North, Howard C.; and Williamson, Charles W., 3,702,224.
- Etablissement Public: Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
  - Vibert, Claude Jacques; and Le Pape, Louis Jean Theodore, 3,702,133.
- Etablissements Clin-Byla: *See—*
  - Lafille, Claude, 3,702,335.
- Ethyl Corporation: *See—*
  - Beard, William Q., Jr., 3,702,311.
- Etzbach, Volker; and Forg, Wolfgang, to Linde Aktingesellschaft. Refrigeration cycle for the aliquefaction of natural gas. 3,702,063, Cl. 62-23.
- Evans, Robert J., to Aurora Equipment Co. Latching mechanism. 3,702,137, Cl. 211-176.000.
- Factory Mutual Research Corporation: *See—*
  - Livingston, William L.; and Munson, Carl Marshall, 3,702,158.
  - Livingston, William L., 3,702,159.
- Fairchild Camera and Instrument Corporation: *See—*
  - Yu, Albert Y. C.; Gopen, Howard J.; and Waits, Robert K., 3,702,290.
- Fairchild Camera Instrument Corporation: *See—*
  - Learn, Arthur J.; Shepherd, William H.; and Dellioca, Conrad J., 3,702,427.
- Falck-Muus, Harald. Spiral solvent dyeing of candles. 3,702,228, Cl. 8-6.000.
- Fallgatter, Wayne S., to Cities Service Oil Company. Process for the detection of hydrogen sulfide in drill bit cutting. 3,702,235, Cl. 23-230.00r.
- Fantuzzo, Joseph, to Xerox Corporation. Color rendition method. 3,702,483, Cl. 346-74.0es.
- Farbenfabriken Bayer Aktiengesellschaft: *See—*
  - Gilch, Heinrich; Schneider, Kurt; Krefeld-Bockum; and Schnell, Hermann, 3,702,313.
- Farce, Jacques: *See—*
  - Farjon, Raymond; Farce, Jacques; Florent, Jacques; and Dumoulin, Michel, 3,702,314.
- Farjon, Raymond; Farce, Jacques; Florent, Jacques; and Dumoulin, Michel, to Baignol & Farjon S. A. Tracing product mixture comprising an olefinic polymer, and ethylene vinyl acetate copolymer and a high boiling solvent. 3,702,314, Cl. 260-23.00h.
- Farney, Samuel D.: *See—*
  - Young, Robert L.; Wood, Russell E.; Farney, Samuel D.; and Hogan, Arnold U., 3,702,211.
- Farrugie, Kenneth A. Fowl carrier. 3,702,210, Cl. 312-198.000.
- Faure, Jean: *See—*
  - Bex, Lucien; Faure, Jean; and Vienet, Roger, 3,702,416.
- Feakes, Frank; and Padawer, Gabriel E., to National Research Corporation. Method of providing substrates with stiff reinforcing material. 3,702,261, Cl. 117-106.00r.
- Feldman, Samuel I., to Lummus Company, The. Deep water drilling rig. 3,702,105, Cl. 114-.50d.
- Fellion, Yves Louis-Marie, to Laboratoires Toraude. Indole alkaloid derivatives. 3,702,325, Cl. 260-240.0al.
- Ferguson Transformers Pty., Limited: *See—*
  - Grul, Andries Theodorus, 3,702,421.
- Fernald, Herbert B.; Gall, William; Hay, Russell G.; and Kresge, Alfred N., to Gulf Research & Development Company. Process for converting ethylene to normal alpha olefins. 3,702,345, Cl. 260-683.15d.
- Fernandes, John Henry, to Combustion Engineering, Inc. Downdraft cupola incorporation means to preheat the charge. 3,702,242, Cl. 75-43.000.
- Ferranti, Limited: *See—*
  - Kennedy, Christopher John; Shepherd, Alexander Turnbull; and Thomas, Graham Isaac, 3,702,471.
- Fessler, Leroy E., to Universal Oil Products Company. Catalytic converter. 3,702,236, Cl. 23-288.00f.
- Fichtel & Sachs AG: *See—*
  - Lutz, Dieter, 3,702,195.
- Ficker, Walter W.: *See—*
  - Cochran, Thomas J.; Coughlin, Charles P.; Ficker, Walter W.; Lent, Charles V.; and Sullivan, Joseph M., 3,702,042.
- Fini, Guiseppe: *See—*
  - Zoli, Armando; Zoli, Luigi; and Fini, Guiseppe, 3,702,056.
- Fink, William C., to General Motors Corporation. Seven-state resistance sensing supervisory system utilizing single pole-double throw switches. 3,702,473, Cl. 340-409.000.
- Fink, William C.; and Stewart, William R., to General Motors Corporation. Seven state resistance sensing supervisory system. 3,702,474, Cl. 340-409.000.
- Finkelstein, Manuel: *See—*
  - Ross, Sidney D.; Dunkl, Franz S.; and Finkelstein, Manuel, 3,702,426.
- Finley, John W., to United States of America, Agriculture. Kynurenine derivatives as sweetening agents. 3,702,255, Cl. 99-141.00a.

- Firmenich & Cie: *See—*
  - Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Irving, Goldman M., 3,702,253.
- Firth, Jack Graham; and Jones, Thomas Alwyn, to National Research Development Corporation. Infra-red gas detectors. 3,702,397, Cl. 250-43.50r.
- Fites, Larry L.; Mann, Kingsley M.; and Utrecht, Karl A., to Upjohn Company, The. Cassette container. 3,702,132, Cl. 206-1.00r.
- Fitzgerald, Derek Lionel William. Non-slip fibreglass surface. 3,702,278, Cl. 161-5.000.
- Flament, Ivon: *See—*
  - Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Irving, Goldman M., 3,702,253.
- Flegel, George J.; and Zopfi, William L., to Josam Manufacturing Co. Self-retaining and sealing joint gasketing sleeve. 3,702,193, Cl. 277-209.000.
- Flickinger, John H.: *See—*
  - Merlino, Thomas R.; Flickinger, John H.; and McFadden, Russell T., 3,702,349.
- Florent, Jacques: *See—*
  - Farjon, Raymond; Farce, Jacques; Florent, Jacques; and Dumoulin, Michel, 3,702,314.
- Foerstner, Richard A., to Amana Refrigeration, Inc. Mechanical coupling arrangement. 3,702,386, Cl. 219-10.550.
- Forg, Wolfgang: *See—*
  - Etzbach, Volker; and Forg, Wolfgang, 3,702,063.
- Forterre, Gerard E., to Lignes Telegraphiques et Telephoniques. Microstrip ring-shaped resonators and microwave generators using the same. 3,702,445, Cl. 331-107.00g.
- Fraenzke, Ernst, to Schaefer, H., KG. Distributing device for articles, particularly luggage. 3,702,130, Cl. 198-181.000.
- Free, William N.: *See—*
  - Bonneville, Gerald D.; Hetke, Adolf; and Free, William N., 3,702,169.
- Frey, Rolf, to Mahle-Werk GmbH. Safety device for die casting machines. 3,702,153, Cl. 164-153.000.
- Frigitronics of Conn., Inc.: *See—*
  - Zacarian, Setrag A., 3,702,114.
- Fritok, William H.; Wolgemuth, Larry G.; and Strand, Robert C., to Atlantic Richfield Company. Method for preparing urethanes from cyclic nitrile carbonates and a hydrotyl-containing compound. 3,702,320, Cl. 260-77.50b.
- Frot, Guy Gabriel: *See—*
  - Dewilde, Francois; and Frot, Guy Gabriel, 3,702,329.
- Frumkin, Mikhail Evseevich: *See—*
  - Dichinsky, Yakov Efimovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Zax, Grigory Iosilfovich; Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; and Frumkin, Mikhail Evseevich, 3,702,186.
- Fujita, Teizo. Relay socket. 3,702,457, Cl. 339-198.00g.
- Furth, Harold P.; and Yoshikawa, Shoichi, to United States of America, Atomic Energy Commission. Device for compression heating of tokamak discharges. 3,702,163, Cl. 176-3.000.
- Fuss, Peter Siegfried, to Bell Telephone Laboratories, Inc. Cascade digital fast fourier analyzer. 3,702,393, Cl. 235-156.000.
- Futaki, Kiyoshi: *See—*
  - Ohyama, Yasushi; Futaki, Kiyoshi; and Tosa, Senji, 3,702,246.
- Gainsville Machine Company, Inc.: *See—*
  - Lewis, Ernest E., 3,702,017.
- Galich, Thomas P. Tennis racket. 3,702,189, Cl. 273-73.00j.
- Gall, William: *See—*
  - Fernald, Herbert B.; Gall, William; Hay, Russell G.; and Kresge, Alfred N., 3,702,345.
- Gartner, Klaus W., 1/2 to Phillips, Peter. Sequential signal producing means. 3,702,070, Cl. 70-278.000.
- Garza, Cesar M. Distributor for six cylinder internal combustion engine including two cam operated contact breaker assemblies. 3,702,384, Cl. 200-19.00a.
- Gatellier, Claude; and Glikmans, Georges, to Institut Francais du Petrole des Carburants et Lubrifiants. Process for improving the food value of microorganisms obtained by culture on hyrdrocarbon substrates. 3,702,283, Cl. 195-28.00r.
- Gatley, John Andrew; and Jackson, George Oliver, to United Kingdom Atomic Energy Authority. Nuclear reactor fuel elements. 3,702,282, Cl. 176-68.000.
- Gautreaux, Gloria A.: *See—*
  - Blanchard, Eugene J.; Gautreaux, Gloria A.; and Harper, Robert J., Jr., 3,702,230.
- Gautschi, Fritz: *See—*
  - Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Irving, Goldman M., 3,702,253.
- Gebert, Meril D. Hair catching device. 3,702,013, Cl. 4-288.000.
- Gene, Bernard Arthur: *See—*
  - Marten, John Anthony; and Gene, Bernard Arthur, 3,702,075.
- General Electric Company: *See—*
  - Ryckman, William D., Jr., 3,702,031.
- General Electric Corporation: *See—*
  - Colling, Ronald L.; and Trenne, Myron U., 3,702,424.
- General Foods Corporation: *See—*
  - Cassanelli, Robert R.; Wauters, Ronald P.; Wirchansky, Anastasia C.; and Wyss, Clement R., 3,702,254.
- General Industries, Inc.: *See—*
  - Grenier, Wilfred J., 3,702,160.
- General Meters Corporation: *See—*
  - Sawyer, Elbert M.; Brown, Joseph M.; Munden, Curtis D.; and Giles, Kenneth E., 3,702,429.
- General Motors Corporation: *See—*
  - Armstrong, Daniel A., 3,702,207.
  - Arntson, Gary L., 3,702,081.
  - Bauchan, Michael L., 3,702,459.
  - Beatenbough, Paul K.; and Scherer, Carl A., 3,702,066.
  - Bonneville, Gerald D.; Hetke, Adolf; and Free, William N., 3,702,169.
  - Ciolli, Henry J., 3,702,064.
  - Fink, William C., 3,702,473.
  - Fink, William C.; and Stewart, William R., 3,702,474.
  - Hewko, Lubomyr O.; and Kepple, Richard K., 3,702,083.
  - Jacobs, James W., 3,702,065.
  - Kepple, Richard K.; Hewko, Lubomyr O.; and Rogers, Arden W., 3,702,084.
  - Podolan, Edward G., 3,702,041.
  - Schulz, John C., 3,702,178.
  - Sharpe, Verlos G., 3,702,069.
  - Snyder, Richard N.; and Wheadon, Ellis G., 3,702,265.
  - Sweet, Douglas W., 3,702,206.
- George, Robert W.: *See—*
  - Price, Raymond E.; Tirrell, Clifford F.; Adams, Richard C.; and George, Robert W., 3,702,103.
- Georgi, Heinz W., to Ivac Corporation. Electronic thermometer. 3,702,076, Cl. 73-362.0ar.
- Georgian, Fieftherios J., to United States of America, Air Force. Antenna and antenna coupling apparatus. 3,702,478, Cl. 343-702.000.
- Getselev, Zinovy Naumovich, to Kuibyshevsky Metallurgichesky zavod im V.I. Lenina. Apparatus for shaping ingots during continuous and semi-continuous casting of metals. 3,702,155, Cl. 164-251.000.
- Gibbons, Carl B.; Kerr, William C.; and Maddocks, Roger H., to Eastman Kodak Company. Web treatment method. 3,702,258, Cl. 117-34.000.
- Gilch, Heinrich; Schneider, Kurt; Krefeld-Bockum; and Schnell, Hermann, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of polyamide foams. 3,702,313, Cl. 260-2.50n.
- Gilchrist, Forbes D., to Motorola Inc. Alternator regulator circuit. 3,702,433, Cl. 322-28.000.
- Giles, Kenneth E.: *See—*
  - Sawyer, Elbert M.; Brown, Joseph M.; Munden, Curtis D.; and Giles, Kenneth E., 3,702,429.
- Glance, Bernard S., to Varian Associates, mesne. Shielded meander line slow wave circuit and tubes using same. 3,702,413, Cl. 315-3.500.
- Glikmans, Georges: *See—*
  - Gatellier, Claude; and Glikmans, Georges, 3,702,283.
- Golja, Joseph, to GTE Automatic Electric Laboratories, Incorporated. Alarm circuit for indicating failure in redundant power supplies. 3,702,469, Cl. 340-248.00a.
- Goodrich, B. F., Company, The: *See—*
  - Kim, Heung T.; and Darby, John P., 3,702,226.
  - Knechtges, Donald P.; and Antlfinger, George J., 3,702,315.
- Gopen, Howard J.: *See—*
  - Yu, Albert Y. C.; Gopen, Howard J.; and Waits, Robert K., 3,702,290.
- Gordon, Asquith Deakin; and Gordon, Vinnicombe. Apparatus for moulding liners of plastic material within container closures. 3,702,225, Cl. 425-112.000.
- Gordon, Vinnicombe: *See—*
  - Gordon, Asquith Deakin; and Gordon, Vinnicombe, 3,702,225.
- Grace, W. R., & Co.: *See—*
  - Eburn, William H., Jr., 3,702,098.
  - Simons, Charles W.; and Gribens, Joel A., 3,702,310.
- Grachev, Leonid Pavlovich: *See—*
  - Dichinsky, Yakov Efimovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Zax, Grigory Iosilfovich; Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; and Frumkin, Mikhail Evseevich, 3,702,186.
- Graham, Dell Derek Paul, to M & T Chemicals (Australia) Pty., Limited. Method of controlling insects on animals with organotin compounds. 3,702,360, Cl. 424-288.000.
- Grasemann, Horst, to Chemische Werke Huels, A.G. Method for introducing boric acid into liquid hydrocarbons during their air oxidation to the corresponding alcohols. 3,702,319, Cl. 260-617.00h.
- Green, Nathan; and Keller, John C., to United States of America, Agriculture. Cis-7-hexadecen-1-ol acetate as an attractant for adult make pink bollworm moths. 3,702,358, Cl. 424-84.000.
- Grenier, Wilfred J., to General Industries, Inc. Suppressor device for automatic on-off sprinkler head. 3,702,160, Cl. 169-20.000.
- Gribens, Joel A.: *See—*
  - Simons, Charles W.; and Gribens, Joel A., 3,702,310.
- Gronfors, Teuvo, to Oy Tampella AB. Adjustable support for ring drilling. 3,702,162, Cl. 173-43.000.
- Grot, Walther Gustav, to Du Pont de Nemours, E. I., and Company. Electrochemical cell containing a water-wettable polytetrafluoroethylene separator. 3,702,267, Cl. 136-146.000.
- Grul, Andries Theodorus, to Ferguson Transformers Pty., Limited. Choke unit. 3,702,421, Cl. 317-99.000.
- Grundig E.M.V. Kurgartenstrasse: *See—*
  - Rabiger, Wolfgang, 3,702,057.
- GTE Automatic Electric Laboratories, Incorporated: *See—*
  - Golja, Joseph, 3,702,469.
- GTE Sylvania Incorporated: *See—*

Gump, J. R.; Kim, Tai K.; and Long, Robert E., Jr., 3,702,233.

Say, Donald L., 3,702,020.

Gulf & Western Industrial Products Company, mesne: *See*—

Niemkiewicz, Ignatius John; Reinemuth, George H.; and Silver, Floyd G., 3,702,177.

Gulf Oil Corporation: *See*—

Armistead, John M.; and Kosiba, Joseph K., 3,702,238.

Henning, John L., Jr.; and Robicheaux, Warren J., 3,702,134.

Gulf Research & Development Company: *See*—

Fernald, Herbert B.; Gall, William; Hay, Russell G.; and Kresge, Alfred N., 3,702,345.

Hartle, Robert J.; and Mc Grath, Joseph J., 3,702,299.

Gulldenpfennig, Klaus; Pommerening, Uwe A.; and Russell, Stanley L., to Stromberg-Carlson Corporation. Queue for electronic telephone exchange. 3,702,380, Cl. 179-27.000.

Gump, J. R.; Kim, Tai K.; and Long, Robert E., Jr., to GTE Sylvania Incorporated. Yttrium purification. 3,702,233, Cl. 23-23.000.

Habermann, Helmut; Roger, Loyen; and Joly, Pierre. Magnetic bearings. 3,702,208, Cl. 308-10.000.

Hageman, Carlton V.; and Rana, Victoriano F., to Harris-Intertype Corporation. Apparatus for separating signatures in a gatherer. 3,702,187, Cl. 271-29.000.

Hakim, Louise Z. Toys with sound producing means. 3,702,038, Cl. 46-175.000.

Halbedel, Don Edward: *See*—

Callender, Jack E.; Halbedel, Don Edward; Bagwell, Benjamin J.; Horning, James Leroy; Lissakers, Erik Axel; Long, Joseph Harold; and Schweitzer, Cameron C., 3,702,381.

Hall, David W.; Kindholm, John A.; Romankiw, Lubomyr T.; and Schmeckenbecher, Arnold F., to International Business Machines Corporation. Process for electrolessly plating magnetic thin films. 3,702,263, Cl. 117-240.000.

Hall, Garth O.: *See*—

Radke, Arthur O.; Hall, Garth O.; and Tengler, Harvey N., 3,702,179.

Hall, Norman T., to Liquid Nitrogen Processing Corporation. Process for production of glass-filled thermoplastic pellets suitable for blending with thermoplastic. 3,702,356, Cl. 264-141.000.

Hallman, John Ray, Jr. Digital tone generator system for electronic organ employing a single master oscillator. 3,702,370, Cl. 84-1.010.

Hammond, Francis H.: *See*—

Selin, Clifford E.; Lyon, Lloyd B.; Holbrook, Stanford T.; and Hammond, Francis H., 3,702,340.

Hanaoka, Masanori, to Toyota Jidosha Kogyo Kabushiki Kaisha. Liquid level controlling apparatus. 3,702,122, Cl. 137-81.500.

Hankins, Ronald A.; Culver, Donald W.; and Scammon, Harrison B., Jr., to Aerojet-General Corporation. Fluid distributors and thrusters. 3,702,174, Cl. 239-265.110.

Harcuba, Siegfried, to Transglas, AG. Glass wall construction consisting of a plurality of glass elements of substantially U-shaped cross section. 3,702,047, Cl. 52-241.000.

Harper, Robert J., Jr.: *See*—

Blanchard, Eugene J.; Gautreaux, Gloria A.; and Harper, Robert J., Jr., 3,702,230.

Harris-Intertype Corporation: *See*—

Hageman, Carlton V.; and Rana, Victoriano F., 3,702,187.

Hawkes, Richard B.; and Johnson, Donald P., 3,702,129.

Hartle, Robert J.; and Mc Grath, Joseph J., to Gulf Research & Development Company. Lubricating composition. 3,702,299, Cl. 252-51.50r.

Hauptman, Neil L.: *See*—

Marshall, Edwin L.; Bocian, Harvey; and Hauptman, Neil L., 3,702,027.

Hawkes, Richard B.; and Johnson, Donald P., to Harris-Intertype Corporation. Mechanical book clamp. 3,702,129, Cl. 198-180.000.

Hawkins, Dale E. Light fountain. 3,702,172, Cl. 239-18.000.

Hay, Russell G.: *See*—

Fernald, Herbert B.; Gall, William; Hay, Russell G.; and Kresge, Alfred N., 3,702,345.

Hayden, William G., to Chemcraft Incorporated. Method of forming a molded article of manufacture with strengthening members formed therein. 3,702,355, Cl. 264-92.000.

Hayes, John C.; Mitsche, Roy T.; Rausch, Richard E.; and Wilhelm, Frederick C., to Universal Oil Products Company. Hydrocarbon conversion process with a bimetallic catalyst. 3,702,293, Cl. 208-139.000.

Haylett, James W.: *See*—

Koller, William B.; Higgins, Robert B.; and Haylett, James W., 3,702,481.

Haynes, Cecil David: *See*—

Weaving, John Harold; and Haynes, Cecil David, 3,702,111.

Heckmaier, Joseph: *See*—

Eck, Herbert; Heckmaier, Joseph; Prigge, Helmut; and Spes, Hellmuth, 3,702,339.

Hedrick, Glen W.: *See*—

Lewis, John B.; and Hedrick, Glen W., 3,702,338.

Henderson, Larry D.; and Johnson, Craig E., to United States of America, Navy. Azeotropic removal of water from ordnance. 3,702,271, Cl. 149-38.000.

Henderson, Larry D.; and Wilson, Robert C., to United States of America, Navy. Continuous process for manufacturing small particle nitrocellulose. 3,702,353, Cl. 264-3.00d.

Henning, John L., Jr.; and Robicheaux, Warren J., to Gulf Oil Corporation. Overflow type floating skimmer. 3,702,134, Cl. 210-242.00.

Hetke, Adolf: *See*—

Bonneville, Gerald D.; Hetke, Adolf; and Free, William N., 3,702,169.

Hewko, Lubomyr O.: *See*—

Kepple, Richard K.; Hewko, Lubomyr O.; and Rogers, Arden W., 3,702,084.

Hewko, Lubomyr O.; and Kepple, Richard K., to General Motors Corporation. Transmission. 3,702,083, Cl. 74-752.00e.

Hicok, Hershel E. Method of rigidly securing members with a recessed fastener. 3,702,085, Cl. 76-107.00a.

Higgins, Robert B.: *See*—

Koller, William B.; Higgins, Robert B.; and Haylett, James W., 3,702,481.

Highland, Stanely E. Travessing skips. 3,702,124, Cl. 182-14.000.

Higuchi, Shigetaka: *See*—

Kawasaki, Meiro; and Higuchi, Shigetaka, 3,702,270.

Hirohashi, Toshiyuki: *See*—

Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; Kobayashi, Tsuyoshi; and Izumi, Takahiro, 3,702,321.

Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; Kobayashi, Tsuyoshi; and Izumi, Takahiro, 3,702,323.

Hoard, Charles T., to MB Associates, mesne. Sheet igniter. 3,702,090, Cl. 89-1.813.

Hockele, Gunter: *See*—

Nehring, Rudolf; Hockele, Gunter; and Ludwig, Gerhard, 3,702,348.

Hockett, Robert M.: *See*—

Lewis, James C.; Lewis, Scott C.; and Hockett, Robert M., 3,702,046.

Hoff, Dale R.; and Rooney, Clarence S., to Merck & Co., Inc. Imidazolyl acrylic acid derivatives. 3,702,330, Cl. 260-309.000.

Hoffman, Daniel S.: *See*—

Dolcimascolo, Charles; Hoffman, Daniel S.; Jones, Hugh L.; and Mercik, James E., 3,702,482.

Hoffman, Lawrence C.; Rudnicki, Mark I.; and Williams, Howard W., to Aerojet-General Corporation. Closed cycle engine system. 3,702,110, Cl. 123-119.00a.

Hoffmann, Manfred; and Schulze, Peter, to Siemens Aktiengesellschaft. Circuit for rapid excitation and de-excitation of an electromagnetic switch. 3,702,425, Cl. 317-151.000.

Hofing, Frederick H., to Westinghouse Electric Corporation. Electrical inductive apparatus. 3,702,451, Cl. 336-70.000.

Hogan, Arnold U.: *See*—

Young, Robert L.; Wood, Russell E.; Farney, Samuel D.; and Hogan, Arnold U., 3,702,211.

Hogstrom, Edwin F.: *See*—

Rood, Alvin A.; Hogstrom, Edwin F.; and Stumphauzer, William C., 3,702,107.

Holbrook, Stanford T.: *See*—

Selin, Clifford E.; Lyon, Lloyd B.; Holbrook, Stanford T.; and Hammond, Francis H., 3,702,340.

Horn, Felix: *See*—

Medawar, George E.; and Horn, Felix, 3,702,220.

Honeywell Inc.: *See*—

Archer, Alva I., 3,702,025.

Breikss, Ivars P., 3,702,382.

Pinckaers, Balthasar Hubert, 3,702,431.

Hoogenhout, Klaas: *See*—

Schoots, Peter J.; Brugmans, Johannes Thomas; and Hoogenhout, Klaas, 3,702,053.

Hooker, Richard, III, to Eastman Kodak Company. Fiber optics encoding-decoding apparatus and method of fabricating the same. 3,702,275, Cl. 156-174.000.

Hope Kabushiki Kaisha: *See*—

Iizuka, Michio; and Kikuchi, Toshikauzu, 3,702,194.

Hori, Terutsugu: *See*—

Ishida, Moriyoshi; Hori, Terutsugu; Otsuka, Yuzuru; Sato, Kunimitsu; Inoue, Katsuyuki; and Ogata, Yoshio, 3,702,341.

Horiguchi, Tadao: *See*—

Takahashi, Shiro; and Horiguchi, Tadao, 3,702,135.

Horning, James Leroy: *See*—

Callender, Jack E.; Halbedel, Don Edward; Bagwell, Benjamin J.; Horning, James Leroy; Lissakers, Erik Axel; Long, Joseph Harold; and Schweitzer, Cameron C., 3,702,381.

Houdaille Industries Inc.: *See*—

Rumsey, Rollin Douglas, 3,702,202.

Howick, Stanley O. Air washer. 3,702,048, Cl. 55-238.000.

Huber, William B., to Motorola, Inc. Magnetic tape reproducing device. 3,702,192, Cl. 274-4.00a.

Hughes, Geoffrey W.: *See*—

Rokop, Joseph; and Hughes, Geoffrey W., 3,702,154.

Hukin, David Ainsworth. Crucibles. 3,702,368, Cl. 13-26.000.

Hull, Donald, to Mobile Dry, Inc. Grain drier. 3,702,183, Cl. 263-41.000.

Humphrey, Floyd B.: *See*—

Nagy, Stanley S.; and Humphrey, Floyd B., 3,702,239.

Hunter, Walker F.; and McCabe, John M., to Eastman Kodak Company. Diazo coating solutions. 3,702,250, Cl. 96-91.00r.

Hureau, Jacques. Extrusion die for the manufacture of nets of artificial material. 3,702,227, Cl. 425-466.000.

Huret, Jacques Andre; and Huret, Roger Henri. Cycle gear change and cycles equipped with such gear change. 3,702,080, Cl. 74-217.00b.

Huret, Roger Henri: *See*—

Huret, Jacques Andre; and Huret, Roger Henri, 3,702,080.

Huyffer, Paul S.: *See*—

Bloom, Stanley M.; Borror, Alan L.; Huyffer, Paul S.; and Macgregor, Paul T., 3,702,244.

Ichiki, Minoru; and Ushimaru, Yutaka, to Mitsui Mining & Smelting Co., Ltd. Method of plating for vinyl chloride resins. 3,702,286, Cl. 204-30.000.

ICI America Inc.: *See*—

Slawinski, Frank E., 3,702,147.

Igarashi, Ryo: *See*—

Nakagiri, Masaru; Onoda, Katsuhiro; Igarashi, Ryo; Wada, Toshio; Nakanuma, Sho; and Tsujide, Tohru, 3,702,466.

Iizuka, Michio; and Kikuchi, Toshikauzu, to Hope Kabushiki Kaisha. Sliding device for ski heel binding. 3,702,194, Cl. 280-11.50t.

Ilford Limited: *See*—

Alcock, David Gerald; Brown, John Colin; Piccotti, Enzo; and Iungius, Vorman John, 3,702,248.

Williams, Alun Trefor Rhys; and Alcock, David Gerald, 3,702,247.

Imperial chemical Industries, Limited: *See*—

Anderson, Norman Stewart, 3,702,280.

Wooler, Alan Metcalf, 3,702,274.

Inaba, Shigeho: *See*—

Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; Kobayashi, Tsuyoshi; and Izumi, Takahiro, 3,702,321.

Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; Kobayashi, Tsuyoshi; and Izumi, Takahiro, 3,702,323.

Inaga, Katsu; and Miura, Yctaro, to Sony Corporation. Tape loop forming and threading mechanism for use with a magnetic recording and reproducing apparatus. 3,702,383, Cl. 179-100.20t.

Inoue, Katsuyuki: *See*—

Ishida, Moriyoshi; Hori, Terutsugu; Otsuka, Yuzuru; Sato, Kunimitsu; Inoue, Katsuyuki; and Ogata, Yoshio, 3,702,341.

Institut Francais de Petrole, des Carburants et Lubrifiants: *See*—

Jacquin, Yves; and Derrien, Michel, 3,702,291.

Institut Francais du Petrole des Carburants et Lubrifiants: *See*—

Gatellier, Claude; and Glikmans, Georges, 3,702,283.

Interface Industries, Inc.: *See*—

St. Jean, Lloyd E., 3,702,097.

St. Jean, Lloyd L., 3,702,392.

International Business Machines: *See*—

Cochran, Thomas J.; Coughlin, Charles P.; Ficker, Walter W.; Lent, Charles V.; and Sullivan, Joseph M., 3,702,042.

International Business Machines Corporation: *See*—

Castrucci, Paul P., 3,702,464.

Hall, David W.; Kindholm, John A.; Romankiw, Lubomyr T.; and Schmeckenbecher, Arnold F., 3,702,263.

Johnston, Harold K.; and Larson, Theodore L., 3,702,273.

Melnyk, George, 3,702,467.

International Flavors & Fragrances Inc.: *See*—

Beets, Muus G. J.; and van Essen, Harm, 3,702,343.

International Nickel Company, The: *See*—

Church, Nathan Lewis, 3,702,269.

International Salt Company: *See*—

Jacoby, Charles H., 3,702,059.

Iowa State University Research Foundation, Inc.: *See*—

Brown, Robert G., 3,702,477.

Irving, Goldman M.: *See*—

Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Irving, Goldman M., 3,702,253.

Ishida, Moriyoshi; Hori, Terutsugu; Otsuka, Yuzuru; Sato, Kunimitsu; Inoue, Katsuyuki; and Ogata, Yoshio, to Ajinomoto Co., Inc. Method of recovering lysine from a fermentation broth. 3,702,341, Cl. 260-527.00n.

Ishizumi, Kikuo: *See*—

Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; Kobayashi, Tsuyoshi; and Izumi, Takahiro, 3,702,321.

Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; Kobayashi, Tsuyoshi; and Izumi, Takahiro, 3,702,323.

Isono, Katsuo; and Okada, Hisao, to Sony Corporation. Comb filter circuit. 3,702,376, Cl. 178-5.40r.

Iungius, Vorman John: *See*—

Alcock, David Gerald; Brown, John Colin; Piccotti, Enzo; and Iungius, Vorman John, 3,702,248.

Ivac Corporation: *See*—

Georgi, Heinz W., 3,702,076.

Iwautsu Electric Co., Ltd.: *See*—

Kishi, Hirotoshi, 3,702,403.

Izdatelstvo "Izvestia": *See*—

Dichinsky, Yakov Efimovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Zax, Grigory Iosilfovich; Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; and Frumkin, Mikhail Evseevich, 3,702,186.

Izumi, Takahiro: *See*—

Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; Kobayashi, Tsuyoshi; and Izumi, Takahiro, 3,702,321.

Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; Kobayashi, Tsuyoshi; and Izumi, Takahiro, 3,702,323.

Jackson, George Oliver: *See*—

Gatley, John Andrew; and Jackson, George Oliver, 3,702,282.

Jacobs, David F., to Westinghouse Electric Corporation. Method and apparatus for light detector fabrication without brazing. 3,702,402, Cl. 250-216.000.

Jacobs, Earl D., to Sundstrand Data Control, Inc., mesne. Accelerometer. 3,702,073, Cl. 73-517.000.

Jacobs, James W., to General Motors Corporation. Automobile air conditioning compressor superheat safety and ambient switch. 3,702,065, Cl. 62-158.000.

Jacoby, Charles H., to International Salt Company. Grouting fissures in underground rock salt deposits. 3,702,059, Cl. 61-35.000.

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Jaffe, Max L. Garment hanger. 3,702,166, Cl. 223-85.000.

Jakenberg, Klas-Erik, to Uddeholms Aktiebolag. Saw blade steel and saw blades or saw-blade strip made therefrom. 3,702,268, Cl. 148-12.000.

Janke, Donald E., to Whirlpool Corporation. Digital dryer control circuit. 3,702,030, Cl. 34-33.000.

Jansse, Leonard: *See*—

De Blok, Jan F.; and Jansse, Leonard, 3,702,151.

Janssen, Peter Johannes Gubertus, to U.S. Philips Corporation. Circuit arrangement for supplying EHT to the acceleration anode of a picture display tube. 3,702,414, Cl. 315/029/000.

Janssen, Peter Johannes Hubertus; and U.S. Philips Corporation. Detection circuit for frequency-modulated signals. 3,702,442, Cl. 329-103.000.

Jaure, Robert Pierre: *See*—

Viers, Jean-Charles; and Jaure, Robert Pierre, 3,702,212.

Jayne, Clarence V.; Regep, Gazie K.; and Templeton, James D., to Beaunit Corporation. Coated polyester fiberfill. 3,702,260, Cl. 117-100.00c.

Jeffries, Dan W., 1/2 to Nash, Harold W. Compensating hydraulic brake structure with manual override. 3,702,125, Cl. 188-71.800.

Jennings, Lewis F.: *See*—

Bower, Kenneth W.; and Jennings, Lewis F., 3,702,417.

Jenoptik Jena G.m.b.H.: *See*—

Maenz, Harald; and Risch, Gerhard, 3,702,216.

Jerchel, Dietrich: *See*—

Ost, Walter; Thomas, Klaus; and Jerchel, Dietrich, 3,702,344.

Jeumont-Schneider: *See*—

Ricaud, Pierre A.; and Cynober, Simon A., 3,702,099.

Johansson, John G.: *See*—

Skinner, Wilfred A.; Johansson, John G.; and Johnson, Howard L., 3,702,324.

Johnson, Craig E.: *See*—

Henderson, Larry D.; and Johnson, Craig E., 3,702,271.

Johnson, Donald P.: *See*—

Hawkes, Richard B.; and Johnson, Donald P., 3,702,129.

Johnson, Howard L.: *See*—

Skinner, Wilfred A.; Johansson, John G.; and Johnson, Howard L., 3,702,324.

Johnson, Ralph E.: *See*—

Zwirn, Robert; Johnson, Ralph E.; and Sacks, Jacob M., 3,702,405.

Johnston, David B. R.: *See*—

Shen, Tsung-Ying; Johnston, David B. R.; and Maag, Theodore A., 3,702,362.

Johnston, Harold K.; and Larson, Theodore L., to International Business Machines Corporation. Etching compositions and method for etching Cu and Ni based metals at a uniform rate. 3,702,273, Cl. 156-18.000.

Johnston, Roy Douglas: *See*—

Blake, Paul Desmond; Johnston, Roy Douglas; Phelps, Brian; Chapman, Edwin Albert; and Bartlett, Ronald Leonard, 3,702,390.

Jolly, Jean: *See*—

Warnant, Julien; Jolly, Jean; and Joly, Robert, 3,702,334.

Joly, Pierre: *See*—

Habermann, Helmut; Roger, Loyen; and Joly, Pierre, 3,702,208.

Joly, Robert: *See*—

Warnant, Julien; Jolly, Jean; and Joly, Robert, 3,702,334.

Jones, Hugh L.: *See*—

Dolcimascolo, Charles; Hoffman, Daniel S.; Jones, Hugh L.; and Mercik, James E., 3,702,482.

Jones, Robert L., 1/2 to Palm, James T. Mold for casting concrete panels. 3,702,180, Cl. 249-188.000.

Jones, Thomas Alwyn: *See*—

Firth, Jack Graham; and Jones, Thomas Alwyn, 3,702,397.

Jordan, William E.: *See*—

Stokes, David Roth; Latone, Salvatore; and Jordan, William E., 3,702,131.

Josam Manufacturing Co.: *See*—

Flegel, George J.; and Zopfi, William L., 3,702,193.
Junkerather Maschinenbau Gesellschaft mit beschrankter Haftung: *See—*
Munk, Friedrich; and Korfer, Gunter, 3,702,184.
Jurgensen, David J., to Tektronix, Inc. Amplitude modulation test circuit. 3,702,375, Cl. 178-5.4te.
Kanegafuchi Boseki Kabushiki Kaisha: *See—*
Kimura, Isao; Ogata, Fumimaro; and Ohtomo, Koichiro, 3,702,350.
Kanen, Robert M.: *See—*
Wurst, John W.; and Kanen, Robert M., 3,702,432.
Kawasaki, Meiro; and Higuchi, Shigetaka, to Sony Corporation. Method of making a magnetic powder. 3,702,270, Cl. 148-105.000.
Keesee, Ernest W. Handle unit for lawn mower. 3,702,016, Cl. 16-111.000.
Kellar, James S., to Universal Oil Products Company. Conversion of ethylbenzene to styrene. 3,702,346, Cl. 260-669.00r.
Keller, John C.: *See—*
Green, Nathan; and Keller, John C., 3,702,358.
Keller, Joseph H., Jr.; and Sterner, Russel L., to Kidde, Walter, & Company, Inc. Hydraulic outrigger jack with screw lock. 3,702,181, Cl. 254-86.00h.
Kelly, Ramond E.: *See—*
Rabon, James L.; Biegler, Warren H.; and Kelly, Ramond E., 3,702,014.
Kennedy, Christopher John; Shepherd, Alexander Turnbull; and Thomas, Graham Isaac, to Ferranti, Limited. Measuring apparatus. 3,702,471, Cl. 340-347.00p.
Kepple, Richard K.: *See—*
Hewko, Lubomyr O.; and Kepple, Richard K., 3,702,083.
Kepple, Richard K.; Hewko, Lubomyr O.; and Rogers, Arden W., to General Motors Corporation. Transmission. 3,702,084, Cl. 74-752.00e.
Keppler, Arthur T., to Westinghouse Electric Corporation. Door for continuous-cleaning oven. 3,702,112, Cl. 126-19.00r.
Kern, Walter, to Teradyne, Inc. Low-force printed circuit male connection apparatus. 3,702,423, Cl. 317-101.00d.
Kerr, James A.; Rogers, Bernhard J.; and Sutherland, Leslie J., to Rank Organisation Limited, The. Apparatus for converting suppressed carrier chrominance signals into PAL format. 3,702,377, Cl. 178-5.40p.
Kerr, William C.: *See—*
Gibbons, Carl B.; Kerr, William C.; and Maddocks, Roger H., 3,702,258.
Kheifets, Rafail Efimovich: *See—*
Dichinsky, Yakov Efimovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Zax, Grigory Iosilfovich; Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; and Frumkin, Mikhail Evseevich, 3,702,186.
Kibler, Gene M.; and Singleton, Clifton L., to Pfizer Inc. Fumaric acid crystallization process. 3,702,342, Cl. 260-537.00n.
Kidde, Walter, & Company, Inc.: *See—*
Keller, Joseph H., Jr.; and Sterner, Russel L., 3,702,181.
Kikuchi, Toshikauzu: *See—*
Iizuka, Michio; and Kikuchi, Toshikauzu, 3,702,194.
Kim, Heung T.; and Darby, John P., to Goodrich, B. F., Company, The. Plastic molding. 3,702,226, Cl. 425-326.000.
Kim, Tai K.: *See—*
Gump, J. R.; Kim, Tai K.; and Long, Robert E., Jr., 3,702,233.
Kimura, Isao; Ogata, Fumimaro; and Ohtomo, Koichiro, to Kanegafuchi Boseki Kabushiki Kaisha. Polyester fibers with aliphatic sulphonic acid containing antistatic agents. 3,702,350, Cl. 260-835.000.
Kindholm, John A.: *See—*
Hall, David W.; Kindholm, John A.; Romankiw, Lubomyr T.; and Schmeckenbecher, Arnold F., 3,702,263.
Kindig, Guilford Edwin, to Eastman Kodak Company. Automatic adjustment of an exposure regulating device in a collapsible camera. 3,702,095, Cl. 95-11.00r.
King, James R., to Union Carbide Corporation, mesne. Optical viewing system for work chambers. 3,702,388, Cl. 219-121.0eb.
King Radio Corporation: *See—*
Alden, John R.; and Aker, John L., 3,702,475.
Kishi, Hirotoshi, to Iwautsu Electric Co., Ltd. Optical testing apparatus comprising means for flowing liquids in free fall condition at constant flow rate. 3,702,403, Cl. 250-218.000.
Klabunde, Ulrich, to Du Pont de Nemours, E. I., and Company. Reaction products of ketones with carbonyl-PH complexes of chromium, molybdenum, and tungsten. 3,702,336, Cl. 260-429.00r.
Klassen, John P. Swath turner. 3,702,052, Cl. 56-370.000.
Klein, Leo I., to Emerson Electric Co. Electrical connections. 3,702,387, Cl. 219-91.000.
Klockner-Werke AG: *See—*
Kuhn, Max; Bell, Gunter; and Watermann, Willy, 3,702,061.
Knausenberger, George E., to United States of America, Air Force. Dynamically stabilized accelerometer and rate gyro device. 3,702,078, Cl. 73-504.000.
Knechtges, Donald P.; and Antlfinger, George J., to Goodrich, B. F., Company, The. Heat sensitive latices. 3,702,315, Cl. 260-29.60m.
Knetsch, Hans, to Wibasto-Wirke W. Baier K G. Control device for electromechanically operated closure panels. 3,702,430, Cl. 318-468.000.
Knorre, Helmut; and Meyer-Simon Eugen, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the pretreatment of plastic for the purpose of adhesive metallization. 3,702,285, Cl. 204-30.000.
Kobayashi, Tsuyoshi: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; Kobayashi, Tsuyoshi; and Izumi, Takahiro, 3,702,321.
Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; Kobayashi, Tsuyoshi; and Izumi, Takahiro, 3,702,323.
Kohn, Gustave K., to Chevron Research Company. Bis-(tetrahaloethyl) trisulfides as seed disinfectants. 3,702,366, Cl. 424-336.000.
Koller, William B.; Higgins, Robert B.; and Haylett, James W., to United States of America, Air Force. Satellite unfurlable antenna array. 3,702,481, Cl. 343-844.000.
Koning, Ely. Manufacture of lightweight aggregate. 3,702,257, Cl. 106-288.00b.
Koning, Virgil H., to Xerox Corporation. Electronic chopper system for use in facsimile communication comprising means for alternately grounding and ungrounding inputs of amplifier. 3,702,447, Cl. 332-3.000.
Koninklijke Nederlandsche Hoogovens en Staalfabrieken N. V.: *See—*
De Blok, Jan F.; and Jansse, Leonard, 3,702,151.
Konishiroku Photo Industry Co., Ltd.: *See—*
Sato, Shui; Sakazume, Kaiichiro; and Suga, Tsuneo, 3,702,251.
Koppers Company, Inc.: *See—*
Carman, Kenneth K., 3,702,200.
Korfer, Gunter: *See—*
Munk, Friedrich; and Korfer, Gunter, 3,702,184.
Kosaka, Kenzo; Tsunewaki, Masami; Tanaka, Hideo; and Aoki, Akira, to Mitsubishi Rayon Company Limited. Method for manufacturing false twisted threads from thermoplastic resin tapes. 3,702,055, Cl. 57-157.0ts.
Kosiba, Joseph K.: *See—*
Armistead, John M.; and Kosiba, Joseph K., 3,702,238.
Kowalski, Anna: *See—*
Zsoldos, Frank J., Jr.; and Kowalski, Anna, 3,702,298.
Kranz, Walter, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Apparatus for the formation of output signals from gyroscopes. 3,702,079, Cl. 74-5.600.
Krefeld-Bockum: *See—*
Gilch, Heinrich; Schneider, Kurt; Krefeld-Bockum; and Schnell, Hermann, 3,702,313.
Kresge, Alfred N.: *See—*
Fernald, Herbert B.; Gall, William; Hay, Russell G.; and Kresge, Alfred N., 3,702,345.
Kroy, Walter: *See—*
Bogenberger, Richard; Busch, Heinz F. K.; Kroy, Walter; and Mehnert, Walter E., 3,702,378.
Krutis, Edward V., to Allis-Chalmers Manufacturing Company. Steer axle with longitudinal adjustment. 3,702,196, Cl. 280-111.000.
Krysiak, Joseph E.: *See—*
Eklund, Phillip R.; and Krysiak, Joseph E., 3,702,126.
Kuhn, Max; Bell, Gunter; and Watermann, Willy, to Klockner-Werke AG. Hydraulic support systems for mine workings. 3,702,061, Cl. 61-45.00d.
Kuibyshevsky Metallurgichesky zavod im V.I. Lenina: *See—*
Getselev, Zinovy Naumovich, 3,702,155.
Kukolja, Stephan P.; and Morin, Robert B., to Lilly, Eli, and Company. Process for preparing thiazole derivatives. 3,702,328, Cl. 260-302.00h.
Kureha Kagaku Kogyo Kabushiki: *See—*
Arai, Tadashi; Asano, Kiro; and Yamada, Jun, 3,702,054.
Kurita Water Industries Ltd.: *See—*
Takahashi, Shiro; and Horiguchi, Tadao, 3,702,135.
Laboratoires Toraude: *See—*
Fellion, Yves Louis-Marie, 3,702,325.
Lafille, Claude, to Etablissements Clin-Byla. Thioesters of steroids. 3,702,335, Cl. 260-397.450.
Lalancette, Jean-Marc. Preparation of organothioborates. 3,702,337, Cl. 260-462.00r.
Lambertson, Glen R.: *See—*
Avery, Robert T.; Lambertson, Glen R.; and Pike, Chester D., 3,702,450.
Lamph, Ara Norman: *See—*
Van Wagenen, Normal L.; and Lamph, Ara Norman, 3,702,143.
Landsman, Walter A.: *See—*
Melnick, Samuel H.; Landsman, Walter A.; and Stromski, Walter A., 3,702,023.
Larson, Robert L.: *See—*
Phillips, Cecil E.; Bennett, Fay M.; and Larson, Robert L., 3,702,188.
Larson, Theodore L.: *See—*
Johnston, Harold K.; and Larson, Theodore L., 3,702,273.
Latone, Salvatore: *See—*
Stokes, David Roth; Latone, Salvatore; and Jordan, William E., 3,702,131.
Laurex, N.V.: *See—*
Schoots, Peter J.; Brugmans, Johannes Thomas; and Hoogenhout, Klaas, 3,702,053.
Le Pape, Louis Jean Theodore: *See—*

Vibert, Claude Jacques; and Le Pape, Louis Jean Theodore, 3,702,133.
Leake, John Walgate: *See—*
Coodings, Anthony; and Leake, John Walgate, 3,702,409.
Learn, Arthur J.; Shepherd, William H.; and Dellioca, Conrad J., to Fairchild Camera Instrument Corporation. Electromigration resistant metallization for integrated circuits, structure and process. 3,702,427, Cl. 317-234.00r.
Leibson, Irving, to Dart Industries Inc. Crystalline block copolymers of aliphatic alpha-olefins and process of preparing same. 3,702,352, Cl. 260-878.00b.
Lent, Charles V.: *See—*
Cochran, Thomas J.; Coughlin, Charles P.; Ficker, Walter W.; Lent, Charles V.; and Sullivan, Joseph M., 3,702,042.
Lerner, Martin L., to Zenith Radio Corporation. Control system for mask etching apparatus. 3,702,277, Cl. 156-345.000.
Lesniewski, Robert J., to United States of America, National Aeronautics and Space Administration. Data processor with conditionally supplied clock signals. 3,702,463, Cl. 340-172.500.
Levine, Elliot. Envelope with impermanent closure. 3,702,171, Cl. 229-79.000.
Lewis, Ernest E., to Gainsville Machine Company, Inc. Poultry stunning apparatus. 3,702,017, Cl. 17-11.000.
Lewis, James C.; Lewis, Scott C.; and Hockett, Robert M., to Braden Steel Corporation. Prefabricated building sections. 3,702,046, Cl. 52-125.000.
Lewis, John B.; and Hedrick, Glen W., to United States of America, Agriculture. Hydroxy-methylated derivatives of resin acids, their use in elastomeric polyurethanes. 3,702,338, Cl. 260-468.500.
Lewis, Scott C.: *See—*
Lewis, James C.; Lewis, Scott C.; and Hockett, Robert M., 3,702,046.
Leyshon, Hemphrey James, to British Cast Iron Research Association. Melting of iron. 3,702,182, Cl. 263-29.000.
Li, Jorge Pengman; and Biel, John Hans, to Aldrich Chemical Company, Inc. N-beta-1-(3-phenylimidazolidin-2-one) ethyl 4,4-ethylene dioxypiperidines. 3,702,327, Cl. 260-293.660.
Libit, Sidney M.: *See—*
Carow, Robert N.; and Libit, Sidney M., 3,702,165.
Life Support, Inc.: *See—*
Thompson, Tommy Lewis, 3,702,305.
Lignes Telegraphiques et Telephoniques: *See—*
Forterre, Gerard E., 3,702,445.
Lilly, Eli, and Company: *See—*
Kukolja, Stephan P.; and Morin, Robert B., 3,702,328.
Linde Aktingesellschaft: *See—*
Etzbach, Volker; and Forg, Wolfgang, 3,702,063.
Liquid Nitrogen Processing Corporation: *See—*
Hall, Norman T., 3,702,356.
Lissakers, Erik Axel: *See—*
Callender, Jack E.; Halbedel, Don Edward; Bagwell, Benjamin J.; Horning, James Leroy; Lissakers, Erik Axel; Long, Joseph Harold; and Schweitzer, Cameron C., 3,702,381.
Livingston, William L.; and Munson, Carl Marshall, to Factory Mutual Research Corporation. Fixed fire extinguishing system using delayed additive injection. 3,702,158, Cl. 169-15.000.
Livingston, William L., to Factory Mutual Research Corporation. Fire protection system utilizing direct discharge nozzles and fill-in sprinkler heads. 3,702,159, Cl. 169-5.000.
Long, Joseph Harold: *See—*
Callender, Jack E.; Halbedel, Don Edward; Bagwell, Benjamin J.; Horning, James Leroy; Lissakers, Erik Axel; Long, Joseph Harold; and Schweitzer, Cameron C., 3,702,381.
Long, Robert E., Jr.: *See—*
Gump, J. R.; Kim, Tai K.; and Long, Robert E., Jr., 3,702,233.
Longsderff, Richard W.; and Sheetz, Robert Shirk, to United States of America, Atomic Energy Commission. Multi-converter thermionic energy module. 3,702,408, Cl. 310-4.000.
Loveland, Malcolm W., to Atlas Pacific Engineering Company. Orifice structure having two different flow rates. 3,702,144, Cl. 138-44.000.
Lowndes Engineering Co., Inc.: *See—*
Waldron, David W., 3,702,306.
Lubrizol Corporation, The: *See—*
Coleman, Lester E., 3,702,300.
Lucas, Jeffrey Harvey, to Associated Electrical Industries Limited. Specimen stage for an electron microscope. 3,702,399, Cl. 250-49.50b.
Ludwig, Gerhard: *See—*
Nehring, Rudolf; Hockele, Gunter; and Ludwig, Gerhard, 3,702,348.
Lummus Company, The: *See—*
Feldman, Samuel I., 3,702,105.
Luoma, John F.: *See—*
Zachary, Ralph K.; and Luoma, John F., 3,702,161.
Luton, James N., Jr., to United States of America, Atomic Energy Commission. Temperature-compensated trimming windings for water-cooled magnet coils. 3,702,453, Cl. 336-62.000.
Lutz, Dieter, to Fichtel & Sachs AG. Motor vehicle. 3,702,195, Cl. 280-104.000.
Lyon, Lloyd B.: *See—*
Selin, Clifford E.; Lyon, Lloyd B.; Holbrook, Stanford T.; and Hammond, Francis H., 3,702,340.
M & T Chemicals (Australia) Pty., Limited: *See—*
Graham, Dell Derek Paul, 3,702,360.
Maag, Theodore A.: *See—*
Shen, Tsung-Ying; Johnston, David B. R.; and Maag, Theodore A., 3,702,362.
Macgregor, Paul T.: *See—*
Bloom, Stanley M.; Borror, Alan L.; Huyffer, Paul S.; and Macgregor, Paul T., 3,702,244.
Macken, John T.; and Schaefer, Albert H. Vented hearing aid ear mold. 3,702,123, Cl. 181-23.000.
Maddocks, Roger H.: *See—*
Gibbons, Carl B.; Kerr, William C.; and Maddocks, Roger H., 3,702,258.
Maenz, Harald; and Risch, Gerhard, to Jenoptik Jena G.m.b.H. Photographic lens of high image-resolving power comprising two coublets and four single lens elements. 3,702,216, Cl. 350-215.000.
Magic Charm, Inc.: *See—*
Panes, Jack, 3,702,116.
Mahle-Werk GmbH: *See—*
Frey, Rolf, 3,702,153.
Maksim, John, Jr. Oil skimming device and method. 3,702,297, Cl. 210-40.000.
Maldy, Jacques: *See—*
Ecomard, Jean-Francois; and Maldy, Jacques, 3,702,373.
Manhire, Robert G. Temporary cataract fittings. 3,702,218, Cl. 351-167.000.
Mann, Kingsley M.: *See—*
Fites, Larry L.; Mann, Kingsley M.; and Utrecht, Karl A., 3,702,132.
Manthey, Kurt: *See—*
Braun, Klaus; Manthey, Kurt; and Welz, Bernhard, 3,702,219.
Manufacture de Produits Chimiques Protex: *See—*
Tesson, Gerard, 3,702,351.
Marshall, Edwin L.; Bocian, Harvey; and Hauptman, Neil L., to So-mar Dental Studios, Inc. Die holder for dental laboratory. 3,702,027, Cl. 32-11.000.
Marten, John Anthony; and Gene, Bernard Arthur, to Suntester Limited. Vehicle testing apparatus. 3,702,075, Cl. 73-117.000.
Martin, Henry; Aebi, Hans Riehen; and Ebner, Ludwig, to Ciba-Geigy AG. Fungicidal and nematocidal compositions and methods of combating fungi or nematodes using N-(4-homo-3-halophenyl)-N'-lower alkyl-N'-lower alkoxy-urea. 3,702,363, Cl. 424-322.000.
Martin-Marietta Corporation: *See—*
Broderick, John E., 3,702,072.
Martinez, Adelaido J.: *See—*
Dulmage, Howard T.; Correa, Jose A.; and Martinez, Adelaido J., 3,702,359.
Maruyama, Isamu: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; Kobayashi, Tsuyoshi; and Izumi, Takahiro, 3,702,321.
Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; Kobayashi, Tsuyoshi; and Izumi, Takahiro, 3,702,323.
Masar, Edward J., to Westinghouse Electric Corporation. Gauge control method and apparatus for metal rolling mills. 3,702,071, Cl. 72-8.000.
Mattel, Inc.: *See—*
Toy, Raymond M.; Parker, John C.; and Prodger, Brian S., 3,702,037.
Maurer, Albrecht: *See—*
Muller, Ernst; and Maurer, Albrecht, 3,702,150.
MB Associates, mesne: *See—*
Hoard, Charles T., 3,702,090.
Mc Dermitt, Floyd P., to Southwire Company. Wire length counter. 3,702,404, Cl. 250/219/01q.
Mc Donnell, Thomas F.; and Coffee, Ralph E., to Olin Mathieson Chemical Corporation. Spherical rocket propellant casting granules and method of preparation. 3,702,272, Cl. 149-19.000.
Mc Grath, John W., to Western Electric Company, Inc. Diagnostic and repair system for semiconductors. 3,702,437, Cl. 324-158.00f.
Mc Grath, Joseph J.: *See—*
Hartle, Robert J.; and Mc Grath, Joseph J., 3,702,299.
McCabe, John M.: *See—*
Hunter, Walker F.; and McCabe, John M., 3,702,250.
McFadden, Russell T.: *See—*
Merlino, Thomas R.; Flickinger, John H.; and McFadden, Russell T., 3,702,349.
McGahey, Bruce Hamilton; and West, John Wesley, to Bell Telephone Laboratories, Inc. Low impedance fixed point test probe. 3,702,439, Cl. 324-158.00p.
McNeill, John. Adjustable lead line connector. 3,702,036, Cl. 43-44.850.
Medawar, George E.; and Horn, Felix, to Rohr Industries, Inc. Noise reduction in jet engines having fans or low pressure compressors. 3,702,220, Cl. 415-119.000.
Mehnert, Walter E.: *See—*
Bogenberger, Richard; Busch, Heinz F. K.; Kroy, Walter; and Mehnert, Walter E., 3,702,378.
Melnick, Samuel H.; Landsman, Walter A.; and Stromski, Walter A., to Midland Sporting Goods Company, Inc., mesne. Method of forming a racquet. 3,702,023, Cl. 29-163.500.
Melnyk, George, to International Business Machines Corporation. Shaft position sensing device. 3,702,467, Cl. 340-200.000.
Menasha Corporation: *See—*

  - Wharton, Thomas P., 3,702,100.
- Mercik, James E.: *See—*
  - Dolcimascolo, Charles; Hoffman, Daniel S.; Jones, Hugh L.; and Mercik, James E., 3,702,482.
- Merck & Co., Inc.: *See—*
  - Hoff, Dale R.; and Rooney, Clarence S., 3,702,330.
  - Shen, Tsung-Ying; Johnston, David B. R.; and Maag, Theodore A., 3,702,362.
- Merkenschlamer, Hans-Hermann, to Siemens Aktiengesellschaft. Process of producing plated through-hole printed circuit boards. 3,702,284, Cl. 204-15.000.
- Merlino, Thomas R.; Flickinger, John H.; and McFadden, Russell T., to Dow Chemical Company, The. Low temperature curing process and coating compositions suitable therefor. 3,702,349, Cl. 260-830.00r.
- Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
  - Kranz, Walter, 3,702,079.
- Messerschmitt-Bolkow-Blohm GmbH: *See—*
  - Bogenberger, Richard; Busch, Heinz F. K.; Kroy, Walter; and Mehnert, Walter E., 3,702,378.
- Meyer-Simon Eugen: *See—*
  - Knorre, Helmut; and Meyer-Simon Eugen, 3,702,285.
- Midland Sporting Goods Company, Inc., mesne: *See—*
  - Melnick, Samuel H.; Landsman, Walter A.; and Stromski, Walter A., 3,702,023.
- Millman, Victor, to Rohr Industries, Inc. Inlet flow control system for jet engine. 3,702,121, Cl. 137-15.100.
- Miltenberger, Robert S., to National Steel Corporation. Method of preparing deoxidized steel. 3,702,243, Cl. 75-49.000.
- Mitsche, Roy T.: *See—*
  - Hayes, John C.; Mitsche, Roy T.; Rausch, Richard E.; and Wilhelm, Frederick C., 3,702,293.
- Mitsubishi Denki Kabushiki Kaisha: *See—*
  - Yokoyama, Masahiro, 3,702,127.
- Mitsubishi Kenki Kabushiki Kaisha: *See—*
  - Endo, Yoshitaka; Tomiyama, Katsumi; and Takanashi, Yasushi, 3,702,435.
- Mitsubishi Paper Mills, Ltd.: *See—*
  - Ohyama, Yasushi; Futaki, Kiyoshi; and Tosa, Senji, 3,702,246.
- Mitsubishi Rayon Company Limited: *See—*
  - Kosaka, Kenzo; Tsunewaki, Masami; Tanaka, Hideo; and Aoki, Akira, 3,702,055.
- Mitsui Mining & Smelting Co., Ltd.: *See—*
  - Ichiki, Minoru; and Ushimaru, Yutaka, 3,702,286.
- Miura, Yotaro: *See—*
  - Inaga, Katsu; and Miura, Yotaro, 3,702,383.
- Miyashiro, Shoichi; Shirozu, Shunji; and Tsuji, Shiegeo, to Tokyo Shibaura Electric Co., Ltd. Image puckup tube semiconductor target support structure. 3,702,410, Cl. 313-66.000.
- Mobile Dry, Inc.: *See—*
  - Hull, Donald, 3,702,183.
- Monsanto Company: *See—*
  - Phillips, Wendell Gary, 3,702,361.
- Montec Corporation: *See—*
  - Brown, Horace D., 3,702,454.
- Moore, George E., to Watson Manufacturing Company, Inc. Teller mechanism. 3,702,101, Cl. 109-19.000.
- Moore, George E., to Watson Manufacturing Company, Inc. File cabinet. 3,702,209, Cl. 312-196.000.
- Moore, George G., to Motorola, Inc. Selective calling system providing an increased number of calling codes or auxiliary information transfer. 3,702,440, Cl. 325-55.000.
- Mori, Kazuo: *See—*
  - Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; Kobayashi, Tsuyoshi; and Izumi, Takahiro, 3,702,321.
  - Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; Kobayashi, Tsuyoshi; and Izumi, Takahiro, 3,702,323.
- Morin, Robert B.: *See—*
  - Kukolja, Stephan P.; and Morin, Robert B., 3,702,328.
- Morley, Ronald I.; Biernat, Raymond W.; and Smidt-Hayer, Arnold J., to Dymo Industries, Inc. Addressing apparatus. 3,702,400, Cl. 250-65.00t.
- Morris, Ewel J., Jr. Device for cleaning polluted air. 3,702,049, Cl. 55-278.000.
- Moss, Donald R., to Eastman Kodak Company. Apparatus and method for handling a web. 3,702,086, Cl. 83-13.000.
- Motorola Inc.: *See—*
  - Gilchrist, Forbes D., 3,702,433.
  - Huber, William B., 3,702,192.
  - Moore, George G., 3,702,440.
  - Peterson, James W.; and Tempka, John A., 3,702,379.
- Mukai, Toshihiko: *See—*
  - Nakanishi, Michio; and Mukai, Toshihiko, 3,702,333.
- Mulder, Cornelis: *See—*
  - Schmitz, Albert; Mulder, Cornelis; and Slob, Arie, 3,702,428.
- Mullen, John S., to Esso Research and Engineering Company. Pipe line leak detection and location system. 3,702,074, Cl. 73-40.50r.
- Muller, Ernst; and Maurer, Albrecht, to Bizerba-Werke Wilhelm Kraut KG. Slicing machine and clamping device therefor. 3,702,150, Cl. 146-102.00r.
- Munden, Curtis D.: *See—*
  - Sawyer, Elbert M.; Brown, Joseph M.; Munden, Curtis D.; and Giles, Kenneth E., 3,702,429.
- Munk, Friedrich; and Korfer, Gunter, to Junkerather Maschinenbau Gesellschaft mit beschrankter Haftung. Furnace installation particularly for melting gray iron in foundries. 3,702,184, Cl. 266-13.000.
- Munson, Carl Marshall: *See—*
  - Livingston, William L.; and Munson, Carl Marshall, 3,702,158.
- Murex Welding Processes Limited: *See—*
  - Blake, Paul Desmond; Johnston, Roy Douglas; Phelps, Brian; Chapman, Edwin Albert; and Bartlett, Ronald Leonard, 3,702,390.
- N. V. Cacaofabriek de Zaan Koog Zaankijk: *See—*
  - Veltman, Preston Leonard; Van Brederode, Herman; and Verdonk, Johannes C. J., 3,702,252.
- Nagy, Stanley S.; and Humphrey, Floyd B., to Sperry Rand Corporation, mesne. Magnetic storage medium. 3,702,239, Cl. 29-195.000.
- Nakagiri, Masaru; Onoda, Katsuhiro; Igarashi, Ryo; Wada, Toshio; Nakanuma, Sho; and Tsujide, Tohru, to Nippon Electric Company, Limited. Semiconductor integrated circuit memory device utilizing insulated gate type semiconductor elements. 3,702,466, Cl. 340173.00r.
- Nakamura, Akira: *See—*
  - Arai, Hiroshi; Nakamura, Akira; Okamoto, Atutoshi; and Okumura, Shunji, 3,702,205.
- Nakanishi, Michio; and Mukai, Toshihiko, to Yoshitomi Pharmaceutical Industries, Ltd. Cyclopropanecarboxylic acid esters possessing pesticidal properties. 3,702,333, Cl. 260-347.400.
- Nakanuma, Sho: *See—*
  - Nakagiri, Masaru; Onoda, Katsuhiro; Igarashi, Ryo; Wada, Toshio; Nakanuma, Sho; and Tsujide, Tohru, 3,702,466.
- Nash, Harold W.: *See—*
  - Jeffries, Dan W., 3,702,125.
- Nathanson, Fred E.; and White, David M., to United States of America, Navy. Digital programmed transmitter. 3,702,476, Cl. 343-17.1pf.
- National Research Corporation: *See—*
  - Feakes, Frank; and Padawer, Gabriel E., 3,702,261.
- National Research Development Corporation: *See—*
  - Firth, Jack Graham; and Jones, Thomas Alwyn, 3,702,397.
- National Steel Corporation: *See—*
  - Miltenberger, Robert S., 3,702,243.
- Neary, Robert J.: *See—*
  - Rohrs, Marvin K.; and Neary, Robert J., 3,702,156.
- Nehring, Rudolf; Hockele, Gunter; and Ludwig, Gerhard, to Chemische Werke Huls Aktiengesellschaft. Process for the preparation of saturated monocyclic monoterpenes. 3,702,348, Cl. 260-675.500.
- Nielsen, Robert P., to Shell Oil Company. Chemical production of metallic silver deposits. 3,702,259, Cl. 117-37.00r.
- Niemkiewicz, Ignatius John; Reinemuth, George H.; and Silver, Floyd G., to Gulf & Western Industrial Products Company, mesne. Adjustable rotary hydraulic brake. 3,702,177, Cl. 244-110.00a.
- Nippon Electric Company, Limited: *See—*
  - Nakagiri, Masaru; Onoda, Katsuhiro; Igarashi, Ryo; Wada, Toshio; Nakanuma, Sho; and Tsujide, Tohru, 3,702,466.
- Nippon Kokan Kabushiki Kaisha: *See—*
  - Yamagishi, Hidehisa; and Tanaka, Mizuo, 3,702,287.
- Nippon-Gakki Seizo Kabushiki Kaisha: *See—*
  - Okumura, Takatoshi, 3,702,443.
- Nippondenso Kabushiki Kaisha: *See—*
  - Arai, Hiroshi; Nakamura, Akira; Okamoto, Atutoshi; and Okumura, Shunji, 3,702,205.
- Nittan Company: *See—*
  - Sasaki, Koji, 3,702,468.
- Nordson Corporation: *See—*
  - Rood, Alvin A.; Hogstrom, Edwin F.; and Stumphauzer, William C., 3,702,107.
- Norris, Max E., to SCM Corporation. Hydrated emulsifiers for bakery products. 3,702,307, Cl. 252-356.000.
- North American Rockwell Corporation: *See—*
  - Turner, Edgar P., 3,702,145.
- North Electric Company: *See—*
  - Callender, Jack E.; Halbedel, Don Edward; Bagwell, Benjamin J.; Horning, James Leroy; Lissakers, Erik Axel; Long, Joseph Harold; and Schweitzer, Cameron C., 3,702,381.
- North, Howard C.; and Williamson, Charles W., to Esso Research and Engineering Company. Mandrel for extruded thermoplastic film. 3,702,224, Cl. 425-71.000.
- Norton Company: *See—*
  - Chippawa, John Bell, 3,702,369.
- Numakura, Toshihiko, to Sony Corporation. Color video signal recording and reproducing apparatus with pilot signal for automatic color control. 3,702,374, Cl. 178-5.20r.
- Obenhaus, Robert E., to Texas Instruments, Incorporated. Protection system with manual reset means operable only on clearing of the fault. 3,702,418, Cl. 317-13.00a.
- O'Connor, William M., to Avco Corporation. Mine skip loading apparatus. 3,702,140, Cl. 214-622.000.
- Oden, Kenneth W., to Dixie-Narco, Inc. Chain controlled vender for stacked articles. 3,702,164, Cl. 221-77.000.
- Ogata, Fumimaro: *See—*
  - Kimura, Isao; Ogata, Fumimaro; and Ohtomo, Koichiro, 3,702,350.
- Ogata, Yoshio: *See—*
  - Ishida, Moriyoshi; Hori, Terutsugu; Otsuka, Yuzuru; Sato, Kunimitsu; Inoue, Katsuyuki; and Ogata, Yoshio, 3,702,341.

- Ohtomo, Koichiro: *See—*
  - Kimura, Isao; Ogata, Fumimaro; and Ohtomo, Koichiro, 3,702,350.
- Ohyama, Yasushi; Futaki, Kiyoshi; and Tosa, Senji, to Mitsubishi Paper Mills, Ltd. Diffusion transfer process. 3,702,246, Cl. 96-29.00r.
- Okada, Hisao: *See—*
  - Isono, Katsuo; and Okada, Hisao, 3,702,376.
- Okamoto, Atutoshi: *See—*
  - Arai, Hiroshi; Nakamura, Akira; Okamoto, Atutoshi; and Okumura, Shunji, 3,702,205.
- Okamoto, Tadashi: *See—*
  - Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; Kobayashi, Tsuyoshi; and Izumi, Takahiro, 3,702,321.
  - Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; Kobayashi, Tsuyoshi; and Izumi, Takahiro, 3,702,323.
- Okumura, Shunji: *See—*
  - Arai, Hiroshi; Nakamura, Akira; Okamoto, Atutoshi; and Okumura, Shunji, 3,702,205.
- Okumura, Takatoshi, to Nippon-Gakki Seizo Kabushiki Kaisha. Audio-frequency signal level control circuit. 3,702,443, Cl. 330-28.000.
- Olin Mathieson Chemical Corporation: *See—*
  - Mc Donnell, Thomas F.; and Coffee, Ralph E., 3,702,272.
- Olson, Lars-Olov Roland, to Saab-Scania Aktiebolag. Attachment for fastening a luggage rack into the drip moulding of an automobile. 3,702,167, Cl. 224-42.10e.
- Olson, Walter C. Mobile vibratory cable plow. 3,702,062, Cl. 61-72.600.
- Oltmanns, George F. Container carrier. 3,702,203, Cl. 294-87.200.
- Omark Industries, Inc.: *See—*
  - Baker, Charles P., Jr., 3,702,024.
- Onoda, Katsuhiro: *See—*
  - Nakagiri, Masaru; Onoda, Katsuhiro; Igarashi, Ryo; Wada, Toshio; Nakanuma, Sho; and Tsujide, Tohru, 3,702,466.
- Ortolano, Ralph J., to Westinghouse Electric Corporation. Continuous Shrouding-riveted construction. 3,702,221, Cl. 416-191.000.
- Ost, Walter; Thomas, Klaus; and Jerchel, Dietrich, to Boehringer, C. H., Sohn. Novel formamide derivatives. 3,702,344, Cl. 260-561.00s.
- Osterreichische Mineralolverwaltung Aktiengesellschaft: *See—*
  - Bauer, Erich; Reichard, Franz; and Schwarz, Ferdinand, 3,702,308.
- Otsuka, Yuzuru: *See—*
  - Ishida, Moriyoshi; Hori, Terutsugu; Otsuka, Yuzuru; Sato, Kunimitsu; Inoue, Katsuyuki; and Ogata, Yoshio, 3,702,341.
- Owen, Thomas P., to Columbia Broadcasting System, Inc. Voltage-controlled variable gain amplifier. 3,702,444, Cl. 330-28.000.
- Owens-Corning Fiberglas Corporation: *See—*
  - Siefert, August C., 3,702,240.
  - Ward, John E., Jr., 3,702,276.
- Owens-Illinois, Inc.: *See—*
  - Ryan, William H., 3,702,434.
- Oy Tampella AB: *See—*
  - Gronfors, Teuvo, 3,702,162.
- Pacific Coast Pipe Limited, mesne: *See—*
  - Price, George E., 3,702,050.
- Padawer, Gabriel E.: *See—*
  - Feakes, Frank; and Padawer, Gabriel E., 3,702,261.
- Page, Louis J. Ophthalmic mounting for tensionally securing lenses. 3,702,217, Cl. 351-106.000.
- Palm, James T.: *See—*
  - Jones, Robert L., 3,702,180.
- Panes, Jack, to Magic Charm, Inc. Undergarment with adjustable waist size and back support. 3,702,116, Cl. 128-548.
- Parker, John C.: *See—*
  - Toy, Raymond M.; Parker, John C.; and Prodger, Brian S., 3,702,037.
- Parkin, William J., to Sanders Associates, Inc. Bridge balancing circuit. 3,702,401, Cl. 250-210.000.
- Patton, George Allen, to AMP Incorporated. Electrical terminal block for interconnecting a plurality of conductors. 3,702,456, Cl. 339-198.00h.
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- Pavia, Edgar H. Manufacture of sodium hypochlorite. 3,702,234, Cl. 23-86.000.
- Pechiney-Progil: *See—*
  - Pillon, Daniel; and Ducret, Jacques, 3,702,332.
- Pennsalt Chemicals Corporation: *See—*
  - Culver, William Harry, 3,702,262.
- Pennsylvania Engineering Corporation: *See—*
  - Rokop, Joseph; and Hughes, Geoffrey W., 3,702,154.
- Perssons, Per Helge: *See—*
  - Abrahamsson, Set Ingvar; and Perssons, Per Helge, 3,702,138.
- Peterson, James W.; and Tempka, John A., to Motorola, Inc. Data transferring system utilizing frame and bit timing recovery technique. 3,702,379, Cl. 179-15.0bs.
- Peyrot, Jean-Pierre. Welding by electron bombardment. 3,702,389, Cl. 219-121.0eb.
- Pfeiffer, Irving W., to Seat Marker, Inc. Seat marker. 3,702,034, Cl. 40-320.000.
- Pfizer Inc.: *See—*
  - Kibler, Gene M.; and Singleton, Clifton L., 3,702,342.
- Phelps, Brian: *See—*
  - Blake, Paul Desmond; Johnston, Roy Douglas; Phelps, Brian; Chapman, Edwin Albert; and Bartlett, Ronald Leonard, 3,702,390.
- Phillips, Cecil E.; Bennett, Fay M.; and Larson, Robert L., to Saf-Pla Corporation. Therapeutic exerciser with regulatable hydraulic torsional resistance. 3,702,188, Cl. 272-57.000.
- Phillips, Peter: *See—*
  - Gartner, Klaus W., 3,702,070.
- Phillips, Wendell Gary, to Monsanto Company. Insecticidal methods using N-substituted heterocyclic phenacyl halides and ylids. 3,702,361, Cl. 424-263.000.
- Piccotti, Enzo: *See—*
  - Alcock, David Gerald; Brown, John Colin; Piccotti, Enzo; and Iungius, Vorman John, 3,702,248.
- Pienezza, Jessee W.: *See—*
  - Sellers, Aubrey G., 3,702,197.
- Pike, Chester D.: *See—*
  - Avery, Robert T.; Lambertson, Glen R.; and Pike, Chester D., 3,702,450.
- Pillon, Daniel; and Ducret, Jacques, to Pechiney-Progil. N-furfurylmonophosphoryl ethylene diamines. 3,702,332, Cl. 260-347.700.
- Pinckaers, Balthasar Hubert, to Honeywell Inc. Condition responsive modulating motor control system. 3,702,431, Cl. 318-471.000.
- Podolan, Edward G., to General Motors Corporation. Window regulator. 3,702,041, Cl. 49-348.000.
- Polaroid Corporation: *See—*
  - Bloom, Stanley M.; Borror, Alan L.; Huyffer, Paul S.; and Macgregor, Paul T., 3,702,244.
  - Simon, Myron S.; and Waller, David P., 3,702,245.
- Pollack, William, to Westinghouse Electric Corporation. Method of making diffusion bonded battery plaques. 3,702,019, Cl. 29-2.000.
- Pommerening, Uwe A.: *See—*
  - Gulldenpfennig, Klaus; Pommerening, Uwe A.; and Russell, Stanley L., 3,702,380.
- Pope Manufacturing, Inc.: *See—*
  - Pope, Melkilah E., 3,702,035.
- Pope, Melkilah E., to Pope Manufacturing, Inc. Fish lure. 3,702,035, Cl. 43-42.35.
- Price, George E., to Pacific Coast Pipe Limited, mesne. Wood truss arrangement. 3,702,050, Cl. 52-693.
- Price, Raymond E.; Tirrell, Clifford F.; Adams, Richard C.; and George, Robert W. Self-adjusting cut-off knife. 3,702,103, Cl. 113-114.0be.
- Prigge, Helmut: *See—*
  - Eck, Herbert; Heckmaier, Joseph; Prigge, Helmut; and Spes, Hellmuth, 3,702,339.
- Prodger, Brian S.: *See—*
  - Toy, Raymond M.; Parker, John C.; and Prodger, Brian S., 3,702,037.
- Quintal, Bertram S., to Energy Sciences, Inc. Apparatus for the method of producing an energetic electron curtain. 3,702,412, Cl. 313-299.000.
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- Rabon, James L.; Biegler, Warren H.; and Kelly, Ramond E., to United States of America, Navy. Squib ejected marker buoy. 3,702,014, Cl. 9-8.00r.
- Racal Instruments Limited: *See—*
  - Thrower, Keith R., 3,702,441.
- Radke, Arthur O.; Hall, Garth O.; and Tengler, Harvey N., to Universal Oil Products Company. Slide rail assembly. 3,702,179, Cl. 248-430.000.
- Radutsky, Grigory Avramovich: *See—*
  - Dichinsky, Yakov Efimovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Zax, Grigory Iosilfovich; Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; and Frumkin, Mikhail Evseevich, 3,702,186.
- Rainsberger, Paul J.; and Dye, Charles M., Jr., to United States of America, Navy. Electronic double integrator. 3,702,394, Cl. 235-183.000.
- Rana, Victoriano F.: *See—*
  - Hageman, Carlton V.; and Rana, Victoriano F., 3,702,187.
- Rank Organisation Limited, The: *See—*
  - Kerr, James A.; Rogers, Bernhard J.; and Sutherland, Leslie J., 3,702,377.
- Rausch, Richard E.: *See—*
  - Hayes, John C.; Mitsche, Roy T.; Rausch, Richard E.; and Wilhelm, Frederick C., 3,702,293.
- Rausch, Richard E., to Universal Oil Products Company. Trimetallic hydrocarbon conversion catalyst and uses thereof. 3,702,294, Cl. 208-139.000.
- Raynor, Terence Robert; and Abbott, Peter Charles Terence, to AMP Incorporated, mesne. Electrical connector. 3,702,455, Cl. 339-17.00c.
- Raytheon Company: *See—*
  - Bryden, Joseph E., 3,702,470.
- RCA Corporation: *See—*
  - Steudel, Goetz Wolfgang, 3,702,446.
- Redeker, Kurt. Method and means for improving and increasing the reliability of hydraulic and pneumatic multi-circuit control systems. 3,702,120, Cl. 137-1.000.
- Regep, Gazie K.: *See—*

- Jayne, Clarence V.; Regep, Gazie K.; and Templeton, James D., 3,702,260.
- Reichard, Franz: *See—*
  - Bauer, Erich; Reichard, Franz; and Schwarz, Ferdinand, 3,702,308.
- Reinemuth, George H.: *See—*
  - Niemkiewicz, Ignatius John; Reinemuth, George H.; and Silver, Floyd G., 3,702,177.
- Reynolds, Elmer N. Sprinkler head. 3,702,173, Cl. 239-204.000.
- Rhone-Poulenc S.A.: *See—*
  - Dewilde, Francois; and Frot, Guy Gabriel, 3,702,329.
- Ricaud, Pierre A.; and Cynober, Simon A., to Jeumont-Schneider. Electromagnetic junction, inter alia for an overhead duo-rail conveyor. 3,702,099, Cl. 104-105.000.
- Richardson, John W. Safety valve having back pressure compensator. 3,702,142, Cl. 137-472.000.
- Risch, Gerhard: *See—*
  - Maenz, Harald; and Risch, Gerhard, 3,702,216.
- Roberts, Earl J.; Brannan, Mary Ann F.; and Rowland, Stanley P., to United States of America, Agriculture. Tris (2-chloroethyl) phosphoramide used as a crosslinking agent for cellulosic compositions. 3,702,232, Cl. 8-116.00p.
- Robertson, George H., to United States of America, Agriculture. Process for cleaning wool. 3,702,264, Cl. 134-7.000.
- Robicheaux, Warren J.: *See—*
  - Henning, John L., Jr.; and Robicheaux, Warren J., 3,702,134.
- Robins, Janis, to Ashland Oil, Inc. Cold box method. 3,702,316, Cl. 260-38.000.
- Robinson, Frank: *See—*
  - Betts, Max William; and Robinson, Frank, 3,702,068.
- Rockaway Corporation: *See—*
  - Varga, Leroy M.; and Voorhees, Thomas L., 3,702,146.
- Roger, Loyen: *See—*
  - Habermann, Helmut; Roger, Loyen; and Joly, Pierre, 3,702,208.
- Rogers, Arden W.: *See—*
  - Kepple, Richard K.; Hewko, Lubomyr O.; and Rogers, Arden W., 3,702,084.
- Rogers, Bernhard J.: *See—*
  - Kerr, James A.; Rogers, Bernhard J.; and Sutherland, Leslie J., 3,702,377.
- Rohr Industries, Inc.: *See—*
  - Medawar, George E.; and Horn, Felix, 3,702,220.
  - Millman, Victor, 3,702,121.
  - Wellnitz, Jerry N.; and Dummer, Richard S., 3,702,391.
- Rohrs, Marvin K.; and Neary, Robert J., to Aero-Flow Dynamics, Inc. (Wing Company Division, The). Air-to-air energy exchange wheel and method of fabrication. 3,702,156, Cl. 165-10.000.
- Rokop, Joseph; and Hughes, Geoffrey W., to Pennsylvania Engineering Corporation. Continuous casting machine reciprocation and withdrawal control system. 3,702,154, Cl. 164-154.000.
- Romankiw, Lubomyr T.: *See—*
  - Hall, David W.; Kindholm, John A.; Romankiw, Lubomyr T.; and Schmeckenbecher, Arnold F., 3,702,263.
- Rood, Alvin A.; Hogstrom, Edwin F.; and Stumphauzer, William C., to Nordson Corporation. Apparatus for striping inside seams of cans. 3,702,107, Cl. 118-2.000.
- Rooney, Clarence S.: *See—*
  - Hoff, Dale R.; and Rooney, Clarence S., 3,702,330.
- Roos, Dirk Godfried Johannes, to Trans-Atlas A.G. Continuous web feeding apparatus. 3,702,168, Cl. 226-110.000.
- Rosen, Karl Isac Joel. Yarn storing device. 3,702,176, Cl. 242-47.010.
- Rosenberg, Harold: *See—*
  - Breed, Laurence W.; Elliott, Richard L.; and Rosenberg, Harold, 3,702,317.
- Rosendahl, Gottfried R., to United States of America, Navy. Condenser system for high intensity light source. 3,702,395, Cl. 240-41.300.
- Ross, Sidney D.; Dunkl, Franz S.; and Finkelstein, Manuel, to Sprague Electric Company. Dimethylolpropionic acid based electrolytes for electrical capacitors. 3,702,426, Cl. 317-230.000.
- Rowland, Stanley P.: *See—*
  - Roberts, Earl J.; Brannan, Mary Ann F.; and Rowland, Stanley P., 3,702,232.
- Roy, Fernand. Venetian blind structure, more particularly for doubled glazed sealed window unit. 3,702,040, Cl. 49-64.000.
- Rudnicki, Mark I.: *See—*
  - Hoffman, Lawrence C.; Rudnicki, Mark I.; and Williams, Howard W., 3,702,110.
- Rumsey, Rollin Douglas, to Houdaille Industries Inc. Energy storing absorbing bumper support systems. 3,702,202, Cl. 293-89.000.
- Russell, Stanley L.: *See—*
  - Gulldenpfennig, Klaus; Pommerening, Uwe A.; and Russell, Stanley L., 3,702,380.
- Ryan, William H., to Owens-Illinois, Inc. Power supply system and control circuits therefor. 3,702,434, Cl. 323-20.000.
- Ryckman, William D., Jr., to General Electric Company. Hair dryer hood tilt mechanism. 3,702,031, Cl. 34-99.000.
- S. A. Bekaert-Cockerill: *See—*
  - Van de Loock, Guido; and Van Overbeke, Roeland, 3,702,093.
- Saab-Scania Aktiebolag: *See—*
  - Olson, Lars-Olov Roland, 3,702,167.
- Sacks, Jacob M.: *See—*
  - Zwirn, Robert; Johnson, Ralph E.; and Sacks, Jacob M., 3,702,405.
- Saf-Pla Corporation: *See—*
  - Phillips, Cecil E.; Bennett, Fay M.; and Larson, Robert L., 3,702,188.
- Sakazume, Kaiichiro: *See—*
  - Sato, Shui; Sakazume, Kaiichiro; and Suga, Tsuneo, 3,702,251.
- Sanders Associates, Inc.: *See—*
  - Parkin, William J., 3,702,401.
- Sasaki, Koji, to Nittan Company. Fire alarming system. 3,702,468, Cl. 340-237.00s.
- Sato, Kunimitsu: *See—*
  - Ishida, Moriyoshi; Hori, Terutsugu; Otsuka, Yuzuru; Sato, Kunimitsu; Inoue, Katsuyuki; and Ogata, Yoshio, 3,702,341.
- Sato, Shui; Sakazume, Kaiichiro; and Suga, Tsuneo, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide photographic emulsion for microfilm use. 3,702,251, Cl. 96-124.000.
- Sawyer, Elbert M.; Brown, Joseph M.; Munden, Curtis D.; and Giles, Kenneth E., to General Meters Corporation. Cycloconverter silicon controlled rectifier gate-cathode circuit signal and power system. 3,702,429, Cl. 318-227.000.
- Say, Donald L., to GTE Sylvania Incorporated. Electrode alignment and assembling device. 3,702,020, Cl. 29-25.190.
- Scammon, Harrison B., Jr.: *See—*
  - Hankins, Ronald A.; Culver, Donald W.; and Scammon, Harrison B., Jr., 3,702,174.
- Schaefer, Albert H.: *See—*
  - Macken, John T.; and Schaefer, Albert H., 3,702,123.
- Schaefer, H., KG: *See—*
  - Fraenzke, Ernst, 3,702,130.
- Scherer, Carl A.: *See—*
  - Beatenbough, Paul K.; and Scherer, Carl A., 3,702,066.
- Schlumberger Technology Corporation: *See—*
  - Warren, John P., 3,702,436.
- Schmeckenbecher, Arnold F.: *See—*
  - Hall, David W.; Kindholm, John A.; Romankiw, Lubomyr T.; and Schmeckenbecher, Arnold F., 3,702,263.
- Schmitt, Hubert A., to Boeing Company, The. Double shank bolt. 3,702,087, Cl. 85-39.000.
- Schmitt, Hubert A., to Boeing Company, The. Double shank blind bolt. 3,702,088, Cl. 85-77.000.
- Schmitz, Albert; Mulder, Cornelis; and Slob, Arie, to U.S. Philips Corporation. Monolithic IC with complementary transistors and plural buried layers. 3,702,428, Cl. 317-235.00r.
- Schneider, Kurt: *See—*
  - Gilch, Heinrich; Schneider, Kurt; Krefeld-Bockum; and Schnell, Hermann, 3,702,313.
- Schnell, Hermann: *See—*
  - Gilch, Heinrich; Schneider, Kurt; Krefeld-Bockum; and Schnell, Hermann, 3,702,313.
- Scholin, Harold W., to Unirazor, Ltd. Razor. 3,702,026, Cl. 30-49.000.
- Schoots, Peter J.; Brugmans, Johannes Thomas; and Hoogenhout, Klaas, to Laurex, N.V. Metallic yarn. 3,702,053, Cl. 57-154.000.
- Schor, Ferdinand William, to AMP Incorporated. Filters for interconnection systems. 3,702,422, Cl. 317-101.0cc.
- Schulson, Erland Maxwell: *See—*
  - Van-Essen, Christopher Geoffrey; Schulson, Erland Maxwell; and Donaghay, Richard Hugh, 3,702,398.
- Schultz, Rudd. Safety automotive lighting circuits. 3,702,415, Cl. 315-82.000.
- Schultz, Wilmer R.: *See—*
  - Tipton, Max E.; and Schultz, Wilmer R., 3,702,204.
- Schultz, Wilmer R., mesne: *See—*
  - Tipton, Max E.; and Schultz, Wilmer R., 3,702,204.
- Schulz, John C., to General Motors Corporation. Engine mount assembly. 3,702,178, Cl. 248-9.000.
- Schulze, Peter: *See—*
  - Hoffmann, Manfred; and Schulze, Peter, 3,702,425.
- Schwab, Kurt, to Swarorski, D., & Co. Reflex light reflector sheet and method for its manufacture. 3,702,213, Cl. 350-105.000.
- Schwarz, Ferdinand: *See—*
  - Bauer, Erich; Reichard, Franz; and Schwarz, Ferdinand, 3,702,308.
- Schweitzer, Cameron C.: *See—*
  - Callender, Jack E.; Halbedel, Don Edward; Bagwell, Benjamin J.; Horning, James Leroy; Lissakers, Erik Axel; Long, Joseph Harold; and Schweitzer, Cameron C., 3,702,381.
- SCM Corporation: *See—*
  - Norris, Max E., 3,702,307.
- Seat Marker, Inc.: *See—*
  - Pfeiffer, Irving W., 3,702,034.
- Security Chemicals, Inc.: *See—*
  - Tike, Elmer A., 3,702,331.
- Segre, Joseph P., to American Optical Corporation. Electro-optical device for conversion of tangential and radial polarization components to rectangular coordinate components. 3,702,214, Cl. 350-150.000.
- Selin, Clifford E.; Lyon, Lloyd B.; Holbrook, Stanford T.; and Hammond, Francis H., to American Hydrocarbon Company. Oxidation process employing nitrogen oxide catalysis for the preparation of humates from coal. 3,702,340, Cl. 260-515.00h.
- Sellers, Aubrey G., 33 1/3% to Causey, G. E. and 33 1/3% to Pienezza, Jessee W. Trailer Hitch. 3,702,197, Cl. 280-502.000.
- Selvaag, Olav. Arrangement in or relating to a terrance floor and a method for the production of same. 3,702,045, Cl. 52-58.000.

- Sharp, Denis, to U.S. Philips Corporation. Circuit for converting a variable frequency pulse circuit into a related electric voltage. 3,702,407, Cl. 307-233.000.
- Sharpe, Verlos G., to General Motors Corporation. Apparatus for sanitizing a domestic clothes washer. 3,702,069, Cl. 68-12.00r.
- Sheetz, Robert Shirk: *See—*
  - Longsderff, Richard W.; and Sheetz, Robert Shirk, 3,702,408.
- Shell Oil Company: *See—*
  - Nielsen, Robert P., 3,702,259.
  - Wilson, William B., 3,702,312.
- Shen, Tsung-Ying; Johnston, David B. R.; and Maag, Theodore A., to Merck & Co., Inc. Use of ureido diphenyl sulfones in the treatment of Marek's disease. 3,702,362, Cl. 424-322.000.
- Shepherd, Alexander Turnbull: *See—*
  - Kennedy, Christopher John; Shepherd, Alexander Turnbull; and Thomas, Graham Isaac, 3,702,471.
- Shepherd, William H.: *See—*
  - Learn, Arthur J.; Shepherd, William H.; and Dellioca, Conrad J., 3,702,427.
- Shirozu, Shunji: *See—*
  - Miyashiro, Shoichi; Shirozu, Shunji; and Tsuji, Shiegeo, 3,702,410.
- Siefert, August C., to Owens-Corning Fiberglas Corporation. Method of making impact resistant inorganic composites. 3,702,240, Cl. 65-4.000.
- Siemens Aktiengesellschaft: *See—*
  - Hoffmann, Manfred; and Schulze, Peter, 3,702,425.
  - Merkenschlamer, Hans-Hermann, 3,702,284.
- Silver, Floyd G.: *See—*
  - Niemkiewicz, Ignatius John; Reinemuth, George H.; and Silver, Floyd G., 3,702,177.
- Simboli, Joseph: *See—*
  - Zilius, Tadas; and Simboli, Joseph, 3,702,191.
- Simon, Myron S.; and Waller, David P., to Polaroid Corporation. Photographic diffusion-transfer processes and elements utilizing pH-sensitive optical filter agents to prevent fogging by extraneous actinic. 3,702,245, Cl. 96-3.000.
- Simons, Charles W.; and Gribens, Joel A., to Grace, W. R., & Co. Gasket-forming compositions having improved resistance to water-based aerosol products. 3,702,310, Cl. 252-430.000.
- Singer Company, The: *See—*
  - Adahan, Carmeli, 3,702,449.
  - Davidson, Donald R.; and Wilson, Edmund B., III, 3,702,102.
  - Wurst, John W.; and Kanen, Robert M., 3,702,432.
- Singleton, Clifton L.: *See—*
  - Kibler, Gene M.; and Singleton, Clifton L., 3,702,342.
- Sinnott, David J.; and Alecci, Donald E., to Star-New Era, Inc. Photographic composition system. 3,702,094, Cl. 95-4.500.
- Skinner, Wilfred A.; Johansson, John G.; and Johnson, Howard L., to Stanford Research Institute. 3,4,5-Trimethoxybenzamides of substituted anilines and of alkylpiperidines. 3,702,324, Cl. 260-293.530.
- Slawinski, Frank E., to ICI America Inc. Packing apparatus and method. 3,702,147, Cl. 141-12.000.
- Slob, Arie: *See—*
  - Schmitz, Albert; Mulder, Cornelis; and Slob, Arie, 3,702,428.
- Smidt-Hayer, Arnold J.: *See—*
  - Morley, Ronald I.; Biernat, Raymond W.; and Smidt-Hayer, Arnold J., 3,702,400.
- Smith, Edward W., Jr., to Eastman Kodak Company. Uniformity of polyester films. 3,702,357, Cl. 264-289.000.
- Smith, James Derek: *See—*
  - Welbourn, Donald Burkewood; Smith, James Derek; and Buckley, Bruce Robert Ashworth, 3,702,043.
- Snyder, Richard N.; and Wheadon, Ellis G., to General Motors Corporation. Lead-acid storage battery paste. 3,702,265, Cl. 136-26.000.
- So-mar Dental Studios, Inc.: *See—*
  - Marshall, Edwin L.; Bocian, Harvey; and Hauptman, Neil L., 3,702,027.
- Societe Anonyme: Ciments Lafarge: *See—*
  - Vibert, Claude Jacques; and Le Pape, Louis Jean Theodore, 3,702,133.
- Societe Argenton, Societe Anonyme: *See—*
  - Viaud, Jean, 3,702,091.
- Solomon, Nathan L. Hair curler. 3,702,119, Cl. 132-41.00b.
- Sony Corporation: *See—*
  - Inaga, Katsu; and Miura, Yotaro, 3,702,383.
  - Isono, Katsuo; and Okada, Hisao, 3,702,376.
  - Kawasaki, Meiro; and Higuchi, Shigetaka, 3,702,270.
  - Numakura, Toshihiko, 3,702,374.
- Southwire Company: *See—*
  - Mc Dermitt, Floyd P., 3,702,404.
- Sperry Rand Corporation, mesne: *See—*
  - Nagy, Stanley S.; and Humphrey, Floyd B., 3,702,239.
- Spes, Hellmuth: *See—*
  - Eck, Herbert; Heckmaier, Joseph; Prigge, Helmut; and Spes, Hellmuth, 3,702,339.
- Sprague Electric Company: *See—*
  - Ross, Sidney D.; Dunkl, Franz S.; and Finkelstein, Manuel, 3,702,426.
- St. Jean, Lloyd E., to Interface Industries, Inc. Anti-hammer apparatus for powered imprinters. 3,702,097, Cl. 101-99.000.
- St. Jean, Lloyd L., to Interface Industries, Inc. Methods for verifying the identity of a card holder and apparatus therefor. 3,702,392, Cl. 235-61.70b.
- Stanford Research Institute: *See—*
  - Skinner, Wilfred A.; Johansson, John G.; and Johnson, Howard L., 3,702,324.
- Star-New Era, Inc.: *See—*
  - Sinnott, David J.; and Alecci, Donald E., 3,702,094.
- Sterner, Russel L.: *See—*
  - Keller, Joseph H., Jr.; and Sterner, Russel L., 3,702,181.
- Steudel, Goetz Wolfgang, to RCA Corporation. Voltage-controlled oscillator using complementary symmetry MOSFET devices. 3,702,446, Cl. 331-111.000.
- Stevens, Christopher Richard: *See—*
  - Bloch, Walter; and Stevens, Christopher Richard, 3,702,371.
- Stevens, L M., Corporation: *See—*
  - Stevens, Louis M., 3,702,256.
- Stevens, Louis M., to Stevens, L M., Corporation. Marine antifouling additive. 3,702,256, Cl. 106-15.0af.
- Stevenson, Louis A., Jr., to A-T-O, Inc. Pulse generator and encoder. 3,702,472, Cl. 340-359.000.
- Stewart, James M., to Stewart Research, Inc. Force transmission and apparatus. 3,702,067, Cl. 64-27.000.
- Stewart Research, Inc.: *See—*
  - Stewart, James M., 3,702,067.
- Stewart, William R.: *See—*
  - Fink, William C.; and Stewart, William R., 3,702,474.
- Stokes, David Roth; Latone, Salvatore; and Jordan, William E., to Xerox Corporation. Belt tracking system. 3,702,131, Cl. 198-202.000.
- Stoll, Max: *See—*
  - Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Irving, Goldman M., 3,702,253.
- Stookey, Kenneth W.; and Chatterjee, Anil K., to Torrax Systems, Inc. Production of usable products from waste material. 3,702,039, Cl. 48-111.000.
- Strand, Robert C.: *See—*
  - Fritok, William H.; Wolgemuth, Larry G.; and Strand, Robert C., 3,702,320.
- Stromberg-Carlson Corporation: *See—*
  - Gulldenpfennig, Klaus; Pommerening, Uwe A.; and Russell, Stanley L., 3,702,380.
- Stromski, Walter A.: *See—*
  - Melnick, Samuel H.; Landsman, Walter A.; and Stromski, Walter A., 3,702,023.
- Stumphauzer, William C.: *See—*
  - Rood, Alvin A.; Hogstrom, Edwin F.; and Stumphauzer, William C., 3,702,107.
- Sturgis, David H.: *See—*
  - Ardary, Zane L.; and Sturgis, David H., 3,702,279.
- Suga, Tsuneo: *See—*
  - Sato, Shui; Sakazume, Kaiichiro; and Suga, Tsuneo, 3,702,251.
- Sukel, Gerald J., to Eastman Kodak Company. Fluid operated control apparatus responsive to sensing a plurality of members containing one of two codes. 3,702,406, Cl. 307-144.000.
- Sullivan, Joseph M.: *See—*
  - Cochran, Thomas J.; Coughlin, Charles P.; Ficker, Walter W.; Lent, Charles V.; and Sullivan, Joseph M., 3,702,042.
- Sumitomo Chemical Company, Ltd.: *See—*
  - Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; Kobayashi, Tsuyoshi; and Izumi, Takahiro, 3,702,321.
  - Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; Kobayashi, Tsuyoshi; and Izumi, Takahiro, 3,702,323.
- Sundstrand Data Control, Inc., mesne: *See—*
  - Jacobs, Earl D., 3,702,073.
- Suntester Limited: *See—*
  - Marten, John Anthony; and Gene, Bernard Arthur, 3,702,075.
- Sutherland, Leslie J.: *See—*
  - Kerr, James A.; Rogers, Bernhard J.; and Sutherland, Leslie J., 3,702,377.
- Swarorski, D., & Co.: *See—*
  - Schwab, Kurt, 3,702,213.
- Sweet, Douglas W., to General Motors Corporation. Synchronoizing circuit for four-wheel anti-lock brake control system. 3,702,206, Cl. 303-21.00r.
- Szabo, Bela G. Defrost evincing devices. 3,702,077, Cl. 73-358.000.
- Takahashi, Shiro; and Horiguchi, Tadao, to Kurita Water Industries Ltd. Filtration apparatus for use in treating sludge. 3,702,135, Cl. 210-270.000.
- Takanashi, Yasushi: *See—*
  - Endo, Yoshitaka; Tomiyama, Katsumi; and Takanashi, Yasushi, 3,702,435.
- Tanaka, Hideo: *See—*
  - Kosaka, Kenzo; Tsunewaki, Masami; Tanaka, Hideo; and Aoki, Akira, 3,702,055.
- Tanaka, Mizuo: *See—*
  - Yamagishi, Hidehisa; and Tanaka, Mizuo, 3,702,287.
- Tektronix, Inc.: *See—*
  - Jurgensen, David J., 3,702,375.
- Tempka, John A.: *See—*

  - Peterson, James W.; and Tempka, John A., 3,702,379.
- Templeton, James D.: *See—*
  - Jayne, Clarence V.; Regep, Gazie K.; and Templeton, James D., 3,702,260.
- Tengler, Harvey N.: *See—*
  - Radke, Arthur O.; Hall, Garth O.; and Tengler, Harvey N., 3,702,179.
- Teradyne, Inc.: *See—*
  - Kern, Walter, 3,702,423.
- Terasaki, Katuhisa. Cigarette holder with tar-collecting insert. 3,702,118, Cl. 131-209.000.
- Tesson, Gerard, to Manufacture de Produits Chimiques Protex. Cationic thermosetting resins containing the reaction product of a carboxyl terminated polyester with an epoxy amine adduct treated with epichlorohydrin. 3,702,351, Cl. 260-835.000.
- Texas Instruments, Incorporated: *See—*
  - Obenhaus, Robert E., 3,702,418.
- Thiele, Kurt, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. 4-Acetoacetyl amino-diphenylamine in compositions and methods for treating pain, fever and inflammation. 3,702,365, Cl. 424-324.000.
- Thomas & Betts Corporation: *See—*
  - Troccoli, Arthur M., 3,702,372.
- Thomas, Graham Isaac: *See—*
  - Kennedy, Christopher John; Shepherd, Alexander Turnbull; and Thomas, Graham Isaac, 3,702,471.
- Thomas, Klaus: *See—*
  - Ost, Walter; Thomas, Klaus; and Jerchel, Dietrich, 3,702,344.
- Thomas, Walter C. Fire extinguisher. 3,702,157, Cl. 169-1.00r.
- Thompson, Herbert Lytle, to Universal Oil Products Company. Aromatic hydrocarbon recovery method. 3,702,295, Cl. 208-321.000.
- Thompson, Robert C., to Brunswick Corporation. Lane resurface level control including a variable dead band motor control. 3,702,149, Cl. 144-117.00c.
- Thompson, Tommy Lewis, to Life Support, Inc. Chemical oxygen generator. 3,702,305, Cl. 252-187.000.
- Thrower, Keith R., to Racal Instruments Limited. Frequency synthesizing system. 3,702,441, Cl. 328-14.000.
- Tike, Elmer A., to Security Chemicals, Inc. Antiozonants. 3,702,331, Cl. 260-326.900.
- Tipton, Max E.; and Schultz, Wilmer R., to Schultz, Wilmer R., mesne. Modular seating assembly. 3,702,204, Cl. 297-248.000.
- Tirrell, Clifford F.: *See—*
  - Price, Raymond E.; Tirrell, Clifford F.; Adams, Richard C.; and George, Robert W., 3,702,103.
- Tokyo Shibaura Electric Co., Ltd.: *See—*
  - Miyashiro, Shoichi; Shirozu, Shunji; and Tsuji, Shiegeo, 3,702,410.
- Tomiyama, Katsumi: *See—*
  - Endo, Yoshitaka; Tomiyama, Katsumi; and Takanashi, Yasushi, 3,702,435.
- Torrax Systems, Inc.: *See—*
  - Stookey, Kenneth W.; and Chatterjee, Anil K., 3,702,039.
- Tosa, Senji: *See—*
  - Ohyama, Yasushi; Futaki, Kiyoshi; and Tosa, Senji, 3,702,246.
- Toy, Raymond M.; Parker, John C.; and Prodger, Brian S., to Mattel, Inc. Toy vehicle system featuring pivotable toy vehicle. 3,702,037, Cl. 46-201.000.
- Toyo Kogyo Co., Ltd.: *See—*
  - Yoshimura, Shigetake, 3,702,385.
- Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
  - Arai, Hiroshi; Nakamura, Akira; Okamoto, Atutoshi; and Okumura, Shunji, 3,702,205.
  - Hanaoka, Masanori, 3,702,122.
- Trans-Atlas A.G.: *See—*
  - Roos, Dirk Godfried Johannes, 3,702,168.
- Transglas, AG: *See—*
  - Harcuba, Siegfried, 3,702,047.
- Trenne, Myron U.: *See—*
  - Colling, Ronald L.; and Trenne, Myron U., 3,702,424.
- Troccoli, Arthur M., to Thomas & Betts Corporation. Molded corona shield for a high voltage coupling. 3,702,372, Cl. 174-73.00s.
- Trotter, Frederick J., Jr., to Celanese Corporation. Solids feeder apparatus. 3,702,128, Cl. 198-64.000.
- Tsuji, Shiegeo: *See—*
  - Miyashiro, Shoichi; Shirozu, Shunji; and Tsuji, Shiegeo, 3,702,410.
- Tsujide, Tohru: *See—*
  - Nakagiri, Masaru; Onoda, Katsuhiro; Igarashi, Ryo; Wada, Toshio; Nakanuma, Sho; and Tsujide, Tohru, 3,702,466.
- Tsunewaki, Masami: *See—*
  - Kosaka, Kenzo; Tsunewaki, Masami; Tanaka, Hideo; and Aoki, Akira, 3,702,055.
- Turner, Edgar P., to North American Rockwell Corporation. Protection and control means for fly-shuttle looms. 3,702,145, Cl. 139-336.000.
- Uddeholms Aktiebolag: *See—*
  - Jakenberg, Klas-Erik, 3,702,268.
- Uhrig, Jerome W., to United States of America, Air Force. Space diversity antenna system for UHF satellite communications for helicopters. 3,702,479, Cl. 343-705.000.
- Union Carbide Corporation, mesne: *See—*
  - King, James R., 3,702,388.
- Union Oil Company of California: *See—*
  - Young, Donald C., 3,702,241.
- Unirazor, Ltd.: *See—*
  - Scholin, Harold W., 3,702,026.
- United Kingdom Atomic Energy Authority: *See—*
  - Birts, Leslie; and Challender, Ronald Scott, 3,702,281.
  - Coodings, Anthony; and Leake, John Walgate, 3,702,409.
  - Gatley, John Andrew; and Jackson, George Oliver, 3,702,282.
- United States Gypsum Company: *See—*
  - Balinski, Henry A., 3,702,044.
- United States of America
  - Agriculture: *See—*
    - Blanchard, Eugene J.; Gautreaux, Gloria A.; and Harper, Robert J., Jr., 3,702,230.
    - Finley, John W., 3,702,255.
    - Green, Nathan; and Keller, John C., 3,702,358.
    - Lewis, John B.; and Hedrick, Glen W., 3,702,338.
    - Roberts, Earl J.; Brannan, Mary Ann F.; and Rowland, Stanley P., 3,702,232.
    - Robertson, George H., 3,702,264.
  - Air Force: *See—*
    - Arnold, Fred E., 3,702,326.
    - Browning, Charles E., 3,702,318.
    - Georgian, Fieftherios J., 3,702,478.
    - Knausenberger, George E., 3,702,078.
    - Koller, William B.; Higgins, Robert B.; and Haylett, James W., 3,702,481.
    - Uhrig, Jerome W., 3,702,479.
    - Zwirn, Robert; Johnson, Ralph E.; and Sacks, Jacob M., 3,702,405.
  - Air Force, mesne: *See—*
    - Breed, Laurence W.; Elliott, Richard L.; and Rosenberg, Harold, 3,702,317.
  - Atomic Energy Commission: *See—*
    - Ardary, Zane L.; and Sturgis, David H., 3,702,279.
    - Avery, Robert T.; Lambertson, Glen R.; and Pike, Chester D., 3,702,450.
    - Cooper, James A., 3,702,420.
    - Furth, Harold P.; and Yoshikawa, Shoichi, 3,702,163.
    - Longsderff, Richard W.; and Sheetz, Robert Shirk, 3,702,408.
    - Luton, James N., Jr., 3,702,453.
  - National Aeronautics and Space Administration: *See—*
    - Lesniewski, Robert J., 3,702,463.
  - Navy: *See—*
    - Diebold, James P.; and Eldridge, Judson B., 3,702,354.
    - Henderson, Larry D.; and Johnson, Craig E., 3,702,271.
    - Henderson, Larry D.; and Wilson, Robert C., 3,702,353.
    - Nathanson, Fred E.; and White, David M., 3,702,476.
    - Rabon, James L.; Biegler, Warren H.; and Kelly, Ramond E., 3,702,014.
    - Rainsberger, Paul J.; and Dye, Charles M., Jr., 3,702,394.
    - Rosendahl, Gottfried R., 3,702,395.
- Universal Oil Products Company: *See—*
  - Adams, George F., 3,702,347.
  - Fessler, Leroy E., 3,702,236.
  - Hayes, John C.; Mitsche, Roy T.; Rausch, Richard E.; and Wilhelm, Frederick C., 3,702,293.
  - Kellar, James S., 3,702,346.
  - Radke, Arthur O.; Hall, Garth O.; and Tengler, Harvey N., 3,702,179.
  - Rausch, Richard E., 3,702,294.
  - Thompson, Herbert Lytle, 3,702,295.
  - Watkins, Charles H., 3,702,237.
- Upjohn Company, The: *See—*
  - Bannister, Brian, 3,702,322.
  - Fites, Larry L.; Mann, Kingsley M.; and Utrecht, Karl A., 3,702,132.
- U.S. Cap & Closure, Inc.: *See—*
  - Carow, Robert N.; and Libit, Sidney M., 3,702,165.
- U.S. Philips Corporation: *See—*
  - Janssen, Peter Johannes Gubertus, 3,702,414.
  - Janssen, Peter Johannes Hubertus; and U.S. Philips Corporation, 3,702,442.
  - Schmitz, Albert; Mulder, Cornelis; and Slob, Arie, 3,702,428.
  - Sharp, Denis, 3,702,407.
  - Viers, Jean-Charles; and Jaure, Robert Pierre, 3,702,212.
- Ushimaru, Yutaka: *See—*
  - Ichiki, Minoru; and Ushimaru, Yutaka, 3,702,286.
- Utrecht, Karl A.: *See—*
  - Fites, Larry L.; Mann, Kingsley M.; and Utrecht, Karl A., 3,702,132.
- Van Brederode, Herman: *See—*
  - Veltman, Preston Leonard; Van Brederode, Herman; and Verdonk, Johannes C. J., 3,702,252.
- Van de Loock, Guido; and Van Overbeke, Roeland, to S. A. Bekaert-Cockerill. Construction of concrete road with expansion joints. 3,702,093, Cl. 94-8.000.
- van Essen, Harm: *See—*
  - Beets, Muus G. J.; and van Essen, Harm, 3,702,343.
- Van Huis, Robert L., to Big Dutchman, Inc. Animal cage construction and method for construction panel therefor. 3,702,109, Cl. 119-17.000.
- Van Overbeke, Roeland: *See—*
  - Van de Loock, Guido; and Van Overbeke, Roeland, 3,702,093.
- Van Wagenen, Normal L.; and Lamph, Ara Norman. Kidney valve for fluid motor and other uses. 3,702,143, Cl. 137-625.210.

- Van-Essen, Christopher Geoffrey; Schulson, Erland Maxwell; and Donaghay, Richard Hugh, to Cambridge Scientific Instruments Limited. Electron beam apparatus. 3,702,398, Cl. 250-49.50a.
- Varco Incorporated: *See—*
  - Bower, Kenneth W.; and Jennings, Lewis F., 3,702,417.
- Varga, Leroy M.; and Voorhees, Thomas L., to Rockaway Corporation. Prong forming and driving mechanism. 3,702,146, Cl. 140-93.00c.
- Varian Associates, mesne: *See—*
  - Glance, Bernard S., 3,702,413.
- Veltman, Preston Leonard; Van Brederode, Herman; and Verdonk, Johannes C. J., to N. V. Cacaofabriek de Zaan Koog Zaankijk. Spray drying solid particles of sugar and recycled crumb product with liquid component of water, sugar coca material, and milk solidsto produce chocolate crumb. 3,702,252, Cl. 99-23.000.
- Verdonk, Johannes C. J.: *See—*
  - Veltman, Preston Leonard; Van Brederode, Herman; and Verdonk, Johannes C. J., 3,702,252.
- Viaud, Jean, to Societe Argenton, Societe Anonyme. Valve actuator means. 3,702,091, Cl. 42-73.000.
- Vibert, Claude Jacques; and Le Pape, Louis Jean Theodore, to Societe Anonyme: Ciments Lafarge and Etablissement Public: Agence Nationale de Valorisation de la Recherche (ANVAR). Process and apparatus for magnetic separation. 3,702,133, Cl. 209-81.00a.
- Vienet, Roger: *See—*
  - Bex, Lucien; Faure, Jean; and Vienet, Roger, 3,702,416.
- Viers, Jean-Charles; and Jaure, Robert Pierre, to U.S. Philips Corporation. Method and device for the manufacture of electron tubes. 3 702,212, Cl. 316-3.000.
- Viking Explosives & Supply Inc.: *See—*
  - Bednar, David H., 3,702,223.
- Vollbrecht, Heinz-Rudiger, to Deutsche Gold- und Silber-Scheideanstalt vormal Roessler. Process and arrangement for starting reactor for reaction of ferrosilicon with gaseous halogenation agent. 3,702,367, Cl. 13-23.000.
- Voorhees, Thomas L.: *See—*
  - Varga, Leroy M.; and Voorhees, Thomas L., 3,702,146.
- Wacker-Chemie G.m.b.H.: *See—*
  - Eck, Herbert; Heckmaier, Joseph; Prigge, Helmut; and Spes, Hellmuth, 3,702,339.
- Wada, Toshio: *See—*
  - Nakagiri, Masaru; Onoda, Katsuhiro; Igarashi, Ryo; Wada, Toshio; Nakanuma, Sho; and Tsujide, Tohru, 3,702,466.
- Waits, Robert K.: *See—*
  - Yu, Albert Y. C.; Gopen, Howard J.; and Waits, Robert K., 3,702,290.
- Waldron, David W., to Lowndes Engineering Co., Inc. Fogging method and apparatus. 3,702,306, Cl. 252-305.000.
- Waldrop, Kenneth M. Automated football games. 3,702,190, Cl. 273-94.00r.
- Waller, David P.: *See—*
  - Simon, Myron S.; and Waller, David P., 3,702,245.
- Ward, John E., Jr., to Owens-Corning Fiberglas Corporation. Method of making high impact strength glass fiber-plastic composites. 3,702,276, Cl. 156-181.000.
- Warnant, Julien; Jolly, Jean; and Joly, Robert. Process for the preparation of 17-substituted-Δ^4-gonenes and intermediates. 3,702,334, Cl. 260-397.400.
- Warren, John P., to Schlumberger Technology Corporation. Methods and apparatus for investigating the spontaneous potential of earth formations. 3,702,436, Cl. 324-10.000.
- Watermann, Willy: *See—*
  - Kuhn, Max; Bell, Gunter; and Watermann, Willy, 3,702,061.
- Watkins, Charles H., to Universal Oil Products Company. Hydrocarbon conversion apparatus. 3,702,237, Cl. 23-288.00r.
- Watkins, Sidney C., to Avco Corporation. Flat spray fuel nozzle. 3,702,175, Cl. 239-422.
- Watson Manufacturing Company, Inc.: *See—*
  - Moore, George E., 3,702,101.
  - Moore, George E., 3,702,209.
- Wauters, Ronald P.: *See—*
  - Cassanelli, Robert R.; Wauters, Ronald P.; Wirchansky, Anastasia C.; and Wyss, Clement R., 3,702,254.
- Weaving, John Harold; and Haynes, Cecil David. Atmospheric pollution control arrangement for internal combustion engine. 3,702,111, Cl. 123-119.00a.
- Welbourn, Donald Burkewood; Smith, James Derek; and Buckley, Bruce Robert Ashworth, to C.A.V. Limited. Lapping, honing or the like machines. 3,702,043, Cl. 51-92.00r.
- Wellnitz, Jerry N.; and Dummer, Richard S., to Rohr Industries, Inc. Infrared concentrating emitter. 3,702,391, Cl. 219-553.000.
- Welz, Bernhard: *See—*
  - Braun, Klaus; Manthey, Kurt; and Welz, Bernhard, 3,702,219.
- West, John Wesley: *See—*
  - McGahey, Bruce Hamilton; and West, John Wesley, 3,702,439.
- Western Electric Company, Inc.: *See—*
  - Mc Grath, John W., 3,702,437.
- Westinghouse Electric Corporation: *See—*
  - Bernales, Benjamin C., 3,702,222.
  - Carothers, Charles H.; and Bogner, Philip W., 3,702,419.
  - Cricchi, James R., 3,702,465.
  - De Corso, Serafino M.; and Carlson, Carl W., 3,702,058.
  - Hofing, Frederick H., 3,702,451.
  - Jacobs, David F., 3,702,402.
  - Keppler, Arthur T., 3,702,112.
  - Masar, Edward J., 3,702,071.
  - Ortolano, Ralph J., 3,702,221.
  - Pollack, William, 3,702,019.
  - Yannucci, Dean A., 3,702,452.
- Westvaco Corporation: *See—*
  - Adams, William S., 3,702,170.
- Wetterhorn, Richard H., to Dresser Industries, Inc. Gas type safety valve. 3,702,141, Cl. 137-469.000.
- Wharton, Thomas P., to Menasha Corporation. Molded pallet. 3,702,100, Cl. 108-58.000.
- Wheadon, Ellis G.: *See—*
  - Snyder, Richard N.; and Wheadon, Ellis G., 3,702,265.
- Whirlpool Corporation: *See—*
  - Janke, Donald E., 3,702,030.
- White, David M.: *See—*
  - Nathanson, Fred E.; and White, David M., 3,702,476.
- Wibasto-Wirke W. Baier K G: *See—*
  - Knetsch, Hans, 3,702,430.
- Wilder, Donald L. Water craft construction. 3,702,106, Cl. 115-70.000.
- Wilhelm, Frederick C.: *See—*
  - Hayes, John C.; Mitsche, Roy T.; Rausch, Richard E.; and Wilhelm, Frederick C., 3,702,293.
- Williams, Alun Trefor Rhys; and Alcock, David Gerald, to Ilford, Limited. Color photographic process using a bleach-fix solution containing a selenosulfate. 3,702,247, Cl. 96-55.000.
- Williams, Howard W.: *See—*
  - Hoffman, Lawrence C.; Rudnicki, Mark I., and Williams, Howard W., 3,702,110.
- Williamson, Charles W.: *See—*
  - North, Howard C.; and Williamson, Charles W., 3,702,224.
- Wilson, Edmund B., III: *See—*
  - Davidson, Donald R.; and Wilson, Edmund B., III, 3,702,102.
- Wilson, John W., Jr.: *See—*
  - Boghosian, Malcolm P.; and Wilson, John W., Jr., 3,702,364.
- Wilson, Robert C.: *See—*
  - Henderson, Larry D.; and Wilson, Robert C., 3,702,353.
- Wilson, Vernon Columbus. True self-heating composition. 3,702,302, Cl. 252-70.000.
- Wilson, William B., to Shell Oil Company. Fluoride-containing crystalline alumino-silicates. 3,702,312, Cl. 252-442.000.
- Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Irving, Goldman M., to Firmenich & Cie. Flavor modified soluble coffee. 3,702,253, Cl. 99-71.000.
- Wirchansky, Anastasia C.: *See—*
  - Cassanelli, Robert R.; Wauters, Ronald P.; Wirchansky, Anastasia C.; and Wyss, Clement R., 3,702,254.
- Wolfe, John Anthony Bartlam; and Clark, John Edwin Frederick, to Chrysler United Kingdom Limited. Methods of making heat exchangers. 3,702,021, Cl. 29-157.30d.
- Wolgemuth, Larry G.: *See—*
  - Fritok, William H.; Wolgemuth, Larry G.; and Strand, Robert C., 3,702,320.
- Wood, Philip C. Hanger arrangement. 3,702,018, Cl. 24-73.00b.
- Wood, Russell E.: *See—*
  - Young, Robert L.; Wood, Russell E.; Farney, Samuel D., and Hogan, Arnold U., 3,702,211.
- Wooler, Alan Metcalf, to Imperial Chemical Industries, Limited. Process for making a rigid polyurethane foam laminate. 3,702,274, Cl. 156-79.000.
- Wurst, John W.; and Kanen, Robert M., to Singer Company, The. Inverters using controlled semiconductor rectifers. 3,702,432, Cl. 321-45.00r.
- Wyss, Clement R.: *See—*
  - Cassanelli, Robert R.; Wauters, Ronald P.; Wirchansky, Anastasia C.; and Wyss, Clement R., 3,702,254.
- Xerox Corporation: *See—*
  - Clemens, Carl F.; and Barker, Thomas B., 3,702,303.
  - Dolcimascolo, Charles; Hoffman, Daniel S.; Jones, Hugh L.; and Mercik, James E., 3,702,482.
  - Egnaczak, Raymond K., 3,702,289.
  - Fantuzzo, Joseph, 3,702,483.
  - Koning, Virgil H., 3,702,447.
  - Stokes, David Roth; Latone, Salvatore; and Jordan, William E., 3,702,131.
- Yamada, Jun: *See—*
  - Arai, Tadashi; Asano, Kiro; and Yamada, Jun, 3,702,054.
- Yamagishi, Hidehisa; and Tanaka, Mizuo, to Nippon Kokan Kabushiki Kaisha. Process for producing manganese dioxide for dry cell. 3,702,287, Cl. 204-83.000.
- Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; Kobayashi, Tsuyoshi; and Izumi, Takahiro, to Sumitomo Chemical Company, Ltd. Process for preparing benzodiazepine drivatives. 3,702,321, Cl. 260-239.0bd.
- Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; Kobayashi, Tsuyoshi; and Izumi, Takahiro, to Sumitomo Chemical Company, Ltd. Method for preparing benzodiazepine deivatives. 3,702,323, Cl. 260-239.30d.
- Yamamoto, Michihiro: *See—*
  - Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama,

Isamu; Mori, Kazuo; Kobayashi, Tsuyoshi; and Izumi, Takahiro, 3,702,321.

Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; Kobayashi, Tsuyoshi; and Izumi, Takahiro, 3,702,323.

Yannucci, Dean A., to Westinghouse Electric Corporation. Electrical windings. 3,702,452, Cl. 336-60.000.

Yokoyama, Masahiro, to Mitsubishi Denki Kabushiki Kaisha. Clutch-brake-motor assembly having mechanical and electromagnetic actuators. 3,702,127, Cl. 192-18.00b.

Yoshikawa, Shoichi: *See—*

Furth, Harold P.; and Yoshikawa, Shoichi, 3,702,163.

Yoshimura, Shigetake, to Toyo Kogyo Co., Ltd. Distributor device with vacuum advance mechanism operated switch structure attached to housing. 3,702,385, Cl. 200-31.000.

Yoshitomi Pharmaceutical Industries, Ltd.: *See—*

Nakanishi, Michio; and Mukai, Toshihiko, 3,702,333.

Young, Donald C., to Union Oil Company of California. Pesticide compositions containing dicarbadodecahydroundecaborates. 3,702,241, Cl. 71-79.

Young, Robert L.; Wood, Russell E.; Farney, Samuel D.; and Hogan, Arnold U., to Carrier Corporation. Frame for rooftop air conditioner. 3,702,211, Cl. 312-257.000.

Yu, Albert Y. C.; Gopen, Howard J.; and Waits, Robert K., to Fairchild Camera and Instrument Corporation. Method of forming contacts to epitaxial G_2A_5 and the resulting structure. 3,702,290, Cl. 204-192.000.

Zacarian, Setrag A., to Frigitronics of Conn., Inc. Liquid refrigerant spray device. 3,702,114, Cl. 128-173.00r.

Zachary, Ralph K.; and Luoma, John F., to Clark Equipment Company. Wing lift linkage. 3,702,161, Cl. 172-311.000.

Zax, Grigory Iosilfovich: *See—*

Dichinsky, Yakov Efimovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Zax, Grigory Iosilfovich; Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; and Frumkin, Mikhail Evseevich, 3,702,186.

Zenith Radio Corporation: *See—*

Lerner, Martin L., 3,702,277.

Ziegler, Karl: *See—*

Ziegler, Karl; and Breil, Heinz (said Breil assor. to said), 3,702,309.

Ziegler, Karl; and Breil, Heinz, said Breil assor. to said Ziegler, Karl. Polymerization of ethylene using reduced group IVb, Vb, and VIb metal salts as the polymerization catalyst. 3,702,309, Cl. 252-441.000.

Zilius, Tadas; and Simboli, Joseph, to Columbia Broadcasting Systems, Inc. Ball and raceway amusement device. 3,702,191, Cl. 273-112.000.

Zoli, Armando; Zoli, Luigi; and Fini, Guiseppe. World timepiece. 3,702,056, Cl. 58-43.000.

Zoli, Luigi: *See—*

Zoli, Armando; Zoli, Luigi; and Fini, Guiseppe, 3,702,056.

Zollner Corporation: *See—*

Zollner, Fred, 3,702,092.

Zollner, Fred, to Zollner Corporation. Pistons for engines. 3,702,092, Cl. 92-187.000.

Zopfi, William L.: *See—*

Flegel, George J.; and Zopfi, William L., 3,702,193.

Zsoldos, Frank J., Jr.; and Kowalski, Anna, to Eco Sciences, Inc., mesne. Method of disinfecting with divalent and trivalent metal germicide. 3,702,298, Cl. 210-62.000.

Zwirn, Robert; Johnson, Ralph E.; and Sacks, Jacob M., to United States of America, Air Force. Electronically variable capacitance. 3,702,405, Cl. 307-109.000.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 7TH DAY OF NOVEMBER, 1972

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Achorn, Frank P., and F. Anderson, Jr. Ruminant direct feeding suspension supplement. T904,004, 11-7-72, Cl. 99—2.

Anderson, Frank Jr.: *See—*

Achorn, Frank P., and Anderson. T904,004.

Bauer, William, Jr., and N. M. Bortnick. Laminar article with fused interface. T904,016, 11-7-72, Cl. 161—254.

Beardwood, Bruce Allan, B. S. Gorton, and P. E. Sample. Articles coated with a coating composition of ethylene-vinyl acetate copolymer. T904,013, 11-7-72, Cl. 117—76.

Beckman, Joseph A.: *See—*

Laman, Joseph R., and Beckman. T904,002.

Booker, Leslie G. S., deceased late of Rochester, N.Y. by N. G. Broderson, executor, and D. W. Heseltine. Photographic sensitizing dyes having improved solubility. T904,015, 11-7-72, Cl. 96—131.

Bortnick, Newman M.: *See—*

Bauer, William Jr., and Bortnick. T904,016.

Broderson, Nancy G.: *See—*

Booker, Leslie G. S., Broderson, and Heseltine. T904,015.

Crouse, William G., to International Business Machines Corp. Capacitive matrix sensing method and apparatus. T904,008, 11-7-72, Cl. 340—365.

Delmore, Paul J. Photographic silver recovery process. T904,009, 11-7-72, Cl. 204—109.

Du Pont de Nemours, E. I., and Co.: *See—*

Haskell, Vernon C. T904,001.

Mell, George P. T904,006.

Takeshita, Tsuneichi. T904,010.

Fields, David P. T904,014.

Elam, Edward U., and M. A. Weaver. Process for removing methyl p-formylbenzoate from mixtures and novel anils obtained therefrom. T904,011, 11-7-72, Cl. 260—471.

Fields, David P., to E. I. du Pont de Nemours and Co. Leaching/heating process for potassium tetratitanate fibers. T904,014, 11-7-72, Cl. 423—598.

Firestone Tire & Rubber Co.: *See—*

Laman, Joseph R., and J. A. Beckman. T904,002.

Fleming, James C. Diazotype composition and element. T904,005, 11-7-72, Cl. 96—91.

Garner, Paul J., to Imperial Chemical Industries Ltd. Production of laminar articles. T904,007, 11-7-72, Cl. 264—45.

Gorton, Bert Sorelle: *See—*

Beardwood, Bruce A., Gorton, and Sample. T904,013.

Haskell, Vernon C., to E. I. du Pont de Nemours and Co. Process for the dispersion polymerization of a vinylidene chloride copolymer. T904,001, 11-7-72, Cl. 260—33.

Heseltine, Donald W.: *See—*

Booker, Leslie G. S., Broderson, and Heseltine. T904,015.

Imperial Chemical Industries Ltd.: *See—*

Garner, Paul J. T904,007.

Staniland, Philip A., and Whale. T904,012

International Business Machines Corp.: *See—*

Crouse, William G. T904,008.

Laman, Joseph R., and J. A. Beckman, to The Firestone Tire & Rubber Co. Production of carbon black from distillate of rubber. T904,002, 11-7-72, Cl. 423—450.

Mell, George P., to E. I. du Pont de Nemours and Co. Metal conductor having alternate layers of an aromatic polyamide enamel and an acrylic wire enamel. T904,006, 11-7-72, Cl. 117—218.

Millikan, Allan G., and E. J. Seus. Radiographic elements containing antihalation dyes. T904,017, 11-7-72, Cl. 96—84.

Salminen, Ilmari F. Competing coupler. T904,003, 11-7-72, Cl. 96—56.4.

Sample, Paul Edward: *See—*

Beardwood, Bruce A., Gorton, and Sample. T904,013.

Seus, Edward J.: *See—*

Millikan, Allan G., and Seus. T904,017.

Staniland, Philip A., and M. Whale, to Imperial Chemical Industries Ltd. Aromatic polymers containing a conductive filler. T904,012, 11-7-72, Cl. 252—503.

Takeshita, Tsuneichi, to E. I. du Pont de Nemours and Co. Regenerative vanadium coordination catalyst process. T904,010, 11-7-72, Cl. 260—80.780.

Weaver, Max A.: *See—*

Elam, Edward U., and Weaver. T904,011.

Whale, Michael: *See—*

Staniland, Philip A., and Whale. T904,012.

LIST OF DESIGN PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF NOVEMBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

American Playground Device Co.: *See—*

Henning, Steven A., and Miller. 225,072.

Henning, Steven A., and Miller. 225,073.

Bates, Richard E., to Wilson Sporting Goods Co. Baseball mitt. 225,044, 11-7-72, D2—361.

Baumanis, Bruno, to Molex Inc. Electrical connector. 225,065, 11-7-72, Cl. D26—1.

Bila Cup AB: *See—*

Pearson, Karl. 225,076.

Boldt, Melvin H., to Rowe International Inc. Phonograph. 225,085, 11-7-72, Cl. D56—4.

Bovino, Joseph F. Panel member for storm and screen doors. 225,052, 11-7-72, Cl. D13—1.

Bovino, Joseph F. Panel member for storm and screen doors. 225,053, 11-7-72, Cl. D13—1.

Brooks, David N., and R. E. Edin, to Sylvania Electric Products Inc. Electrical heater. 225,056, 11-7-72, Cl. D23—77.

Bunn-O-Matic Corp.: *See—*

Martin, John C., and Kniery. 225,077.

Martin, John C., and Kniery. 225,078.

Cannell, James N. Packaging container for a pie or the like. 225,050, 11-7-72, Cl. D9—220.

Chess, Inc.: *See—*

Dervishian, Robert W. 225,074.

Continental Steel Co.: *See—*

Smithbart, Jack A. 225,051.

Cooper, Howard. Bottle. 225,048, 11-7-72, Cl. D9—28.

Dervishian, Robert W., to Chess, Inc. Game board. 225,074, 11-7-72, Cl. D34—5.

Dunlop Molding Ltd.: *See—*

Mills, Iain C. 225,092.

East, Ashasha. Therapeutic cap. 225,088, 11-7-72, Cl. D83—1.

Edwin, Ronald E.: *See—*

Brooks, David N., and Edin. 225,056.

Ferro Corp.: *See—*

Haley, Dwight L. 225,087.

Fites, Larry L., K. M. Mann, K. A. Utrecht, to The Upjohn Co. Cassette packaging holder. 225,049, 11-7-72, D9—187.

Gulf & Western Industries, Inc.: *See—*

Miles, John R. 225,082.

Haley, Dwight L., to Ferro Corp: Combined reflective highway lane divider and road marker. 225,087, 11-7-72, Cl. D72—1.

Henning, Steven A., and P. G. Miller, to American Playground Device Co. Playground climbing bars. 225,072, 11-7-72, D34—5.

Henning, Steven A., and P. G. Miller, to American Playground Device Co. Playground climbing bars. 225,073, 11-7-72, D34—5.

Higashida, Hiroshi. Numeral indicator for computers or the like. 225,068, 11-7-72, Cl. D26—5.

J. G. Furniture Co. Inc.: *See—*

Nance, John. 225,046.

Katz, Maurice D. Transverse radio tuning indicator face plate (6). 225,058, 11-7-72, Cl. D26—1.

Katz, Maurice D. Radio tuning indicator face plate (4). 225,059, 11-7-72, Cl. D26—1.

Katz, Maurice D. Transverse radio tuning indicator face plate (5). 225,060, 11-7-72, Cl. D26—1.

Katz, Maurice D. Circular radio tuning frequency control with transverse indicator faces (12). 225,061, 11-7-72, Cl. D26—1.

Katz, Maurice D. Combined magnifier and radio tuning indicator. 225,062, 11-7-72, Cl. D26—1.

Katz, Maurice D. Radio tuning indicator face plate (8). 225,063, 11-7-72, Cl. D26—1.

Katz, Maurice D. Radio tuning indicator face plate (7). 225,064, 11-7-72, Cl. D26—1.

Katz, Maurice D. Portable radio dual tuning indicator plate. 225,066, 11-7-72, Cl. D26—1.

Katz, Maurice D. Three sided radio tuning indicator face plate. 225,067, 11-7-72, Cl. D26—1.

Kelbish, Edward D. Pre-assembled modular housing structure. 225,054, 11-7-72, Cl. D13—1.

Kelbish, Edward D. Pre-assembled modular housing structure. 225,055, 11-7-72, Cl. D13—1.

Kniery, Edward J.: *See*
  Martin, John C., and Kniery. 225,077.
  Martin, John C., and Kniery. 225,078.

Kohl, Frederick G., and R. K. Marceca, to Rio Enterprises Inc. Chair. 225,045, 11–7–72, Cl. D6—12.

La Torre, Jean. Finger ring or similar article. 225,079, 11–7–72, Cl. D45—10.

Lyons, Lambert F. Four-channel medical condition monitor. 225,089, 11–7–72, Cl. D83—1.

Lyons, Lamber F. Eight-channel medical condition monitor. 225,909, 11–7–72, Cl. D83—1.

MCA Technology, Inc.: *See*
  May, Edmond A. 225,069.

Majewski, Eugene J. Visual manipulative coordination toy. 225,057, 11–7–72, Cl. D25—1.

Mann, Kingsley M.: *See*—
  Fites, Larry L., Mann, and Utrecht. 225,049.

Marceca, Robert K.: *See*—
  Kohl, Frederick G., and Marceca. 225,045.

Marotto, Robert A.: *See*—
  Tornoe, John Axel, and Marotto. 225,047.

Martin, John C., and E. J. Kniery, to Bunn-O-Matic Corp. Funnel for prepackaged coffee. 225,077, 11–7–72, Cl. D44—26.

Martin, John C., and E. J. Kniery, to Bunn-O-Matic Corp. Funnel for prepackaged coffee. 225,078, 11–7–72, Cl. D44—26.

May, Edmond A., to MCA Technology, Inc. Audio speaker. 225,069, 11–7–72, Cl. D26—14.

Mechanic, Bernard I. Finger ring. 225,080, 11–7–72, Cl. D45—10.

Mechanic, Bernard I. Finger ring. 225,081, 11–7–72, Cl. D45—10.

Miles, John R., to Gulf & Western Industries, Inc. Traffic signal. 225,082, 11–7–72, Cl. D48—32.

Miller, Philip G.: *See*—
  Henning, Steven A., and Miller. 225,072.
  Henning, Steven A., and Miller. 225,073.

Mills, Iain C., to Dunlop Holding Ltd. Tire. 225,092, 11–7–72, Cl. D90—20.

Molex Inc.: *See*—
  Baumanis, Bruno. 225,065.

Morse, Guy A., Jr. Vending machine. 225,084, 11–7–72, Cl. D52—3.

Nance, John, to J. G. Furniture Co., Inc. Desk. 225,046, 11–7–72, Cl. D6—157.

Peets, Robert S., to The Singer Co. Combined carrying case, accessory tray and lid for a sewing machine or similar article. 225,091, 11–7–72, Cl. D87—1.

Persson, Karl, to Bila Cup AB. Cup. 225,076, 11–7–72, Cl. D44—9.

Proctor, Richard I. Bicycle exerciser. 225,070, 11–7–72, Cl. D34—5.

Proctor, Richard I. Exerciser or similar article. 225,071, 11–7–72, Cl. D34—5.

Reese, James D. Head for a tiki torch. 225,083, 11–7–72, Cl. D48—24.

Richmond, Albert R., to The Richmond Mfg. Co. The boring auger for horizontal earth boring machines. 225,075, 11–7–72, Cl. D39—1.

Richmond Mfg. Co., The: *See*—
  Richmond, Albert R. 225,075.

Rio Enterprises Inc.: *See*—
  Kohl, Frederick, G., and Marceca. 225,045.

Rowe International Inc.: *See*—
  Boldt, Melvin H. 225,085.

Schlage Lock Co.: *See*—
  Tornoe, John A.,and Marotto. 225,047.

Singer Co., The: *See*—
  Peets, Robert S. 225,091.

Smithhart, Jack A., to Continental Steel Co. Carport. 225,051. 11–7–72, Cl. D13—1.

Stuart, Robert B. Boat hull. 225,086, 11–7–72, Cl. D71—1.

Sylvania Electric Products Inc.: *See*—
  Brooks, David N., and Edin. 225,056.

Tornoe, John A., and R. A. Marotto, to Schlage Lock Co, Lock set handle. 225,047, 11–7–72, Cl. D8—138.

Upjohn Co., The: *See*—
  Fites, Larry L., Mann, and Utrecht. 225,049.

Utrecht, Karl A.: *See*—
  Fites, Larry L., Mann, and Utrecht. 225,049.

Wilson Sporting Goods Co.: *See*—
  Bates, Richard E. 225,044.

Zakarin, Melvin V. Belt. 225,043, 11–7–72, Cl. D2—385.

CLASSIFICATION OF PATENTS

ISSUED NOVEMBER 7, 1972

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 4	
57P	3,702,012
288	3,702,013
CLASS 8	
6	3,702,228
62	3,702,229
100	3,702,230
115.6	3,702,231
116P	3,702,232
CLASS 9	
8R	3,702,014
CLASS 13	
20	3,702,369
23	3,702,367
26	3,702,368
CLASS 16	
55	3,702,015
111	3,702,016
CLASS 17	
11	3,702,017
CLASS 23	
23	3,702,233
86	3,702,234
230R	3,702,235
288F	3,702,236
288R	3,702,237
	3,702,238
CLASS 24	
73B	3,702,018
CLASS 29	
2	3,702,019
25.19	3,702,020
157.3D	3,702,021
	3,702,022
163.5	3,702,023
195	3,702,239
407	3,702,024
574	3,702,025
CLASS 30	
49	3,702,026
CLASS 32	
11	3,702,027
61	3,702,028
CLASS 33	
246AS	3,702,029
CLASS 34	
33	3,702,030
99	3,702,031
CLASS 35	
8A	3,702,032
CLASS 40	
129R	3,702,033
320	3,702,034
CLASS 42	
73	3,702,091
CLASS 43	
42.35	3,702,035
CLASS 46	
175	3,702,038
201	3,702,037
CLASS 48	
111	3,702,039
CLASS 49	
64	3,702,040
348	3,702,041
CLASS 51	
8	3,702,042
92R	3,702,043
CLASS 52	
30	3,702,044
58	3,702,045
125	3,702,046
241	3,702,047
693	3,702,050
CLASS 55	
238	3,702,048
278	3,702,049
CLASS 56	
11.3	3,702,051
370	3,702,052
CLASS 57	
154	3,702,053
157TS	3,702,054
	3,702,055
CLASS 58	
43	3,702,056
CLASS 60	
19	3,702,057
39.65	3,702,058
CLASS 61	
35	3,702,059
45B	3,702,060
45D	3,702,061
72.6	3,702,062
CLASS 62	
23	3,702,063
158	3,702,064
	3,702,065
222	3,702,066
CLASS 64	
27	3,702,067
CLASS 65	
4	3,702,240
CLASS 66	
176	3,702,068
CLASS 68	
12R	3,702,069
CLASS 70	
278	3,702,070
CLASS 71	
79	3,702,241
CLASS 72	
8	3,702,071
307	3,702,072
CLASS 73	
40.5R	3,702,074
117	3,702,075
358	3,702,077
362AR	3,702,076
504	3,702,078
517	3,702,073
CLASS 74	
5.6	3,702,079
217B	3,702,080
492	3,702,081
573	3,702,082
752E	3,702,083
	3,702,084
CLASS 75	
43	3,702,242
49	3,702,243
CLASS 76	
107A	3,702,085
CLASS 83	
13	3,702,086
CLASS 84	
1.01	3,702,370
CLASS 85	
39	3,702,087
77	3,702,088
CLASS 86	
32	3,702,089
CLASS 89	
1.813	3,702,090
CLASS 92	
187	3,702,092
CLASS 94	
8	3,702,093
CLASS 95	
4.5	3,702,094
11R	3,702,095
89R	3,702,096
CLASS 96	
3	3,702,244
	3,702,245
22	3,702,248
29R	3,702,246
55	3,702,247
84R	3,702,249
91R	3,702,250
124	3,702,251
CLASS 99	
23	3,702,252
71	3,702,253
139	3,702,254
141A	3,702,255
CLASS 100	
620	3,702,298
CLASS 101	
99	3,702,097
415.1	3,702,098
CLASS 104	
105	3,702,099
CLASS 106	
15AF	3,702,256
288B	3,702,257
CLASS 108	
58	3,702,100
CLASS 109	
19	3,702,101
CLASS 112	
184	3,702,102
CLASS 113	
114BE	3,702,103
119	3,702,104
CLASS 114	
.5D	3,702,105
CLASS 115	
70	3,702,106
CLASS 117	
34	3,702,258
37R	3,702,259
100C	3,702,260
106R	3,702,261
121	3,702,262
240	3,702,263
CLASS 118	
2	3,702,107
637	3,702,108
CLASS 119	
17	3,702,109
CLASS 123	
119A	3,702,110
	3,702,111
CLASS 126	
19R	3,702,112
CLASS 128	
2GE	3,702,113
173R	3,702,114
276	3,702,115
548	3,702,116
CLASS 131	
4A	3,702,117
209	3,702,118
CLASS 132	
41B	3,702,119
CLASS 134	
7	3,702,264
CLASS 136	
26	3,702,265
33	3,702,266
146	3,702,267
CLASS 137	
1	3,702,120
15.1	3,702,121
81.5	3,702,122
469	3,702,141
472	3,702,142
625.21	3,702,143
CLASS 138	
44	3,702,144
CLASS 139	
336	3,702,145
CLASS 141	
12	3,702,147
67	3,702,148
CLASS 144	
117C	3,702,149
CLASS 146	
102R	3,702,150
CLASS 148	
12	3,702,268
35	3,702,269
105	3,702,270
CLASS 149	
3C	3,702,146
19	3,702,272
38	3,702,271
CLASS 150	
290	3,702,414
CLASS 156	
18	3,702,273
79	3,702,274
174	3,702,275
181	3,702,276
345	3,702,277
CLASS 161	
5	3,702,278
160	3,702,280
170	3,702,279
CLASS 164	
57	3,702,151
89	3,702,152
153	3,702,153
154	3,702,154
251	3,702,155
CLASS 165	
10	3,702,156
CLASS 169	
1R	3,702,157
5	3,702,159
15	3,702,158
20	3,702,160
CLASS 172	
311	3,702,161
CLASS 173	
43	3,702,162
CLASS 174	
42	3,702,371
73S	3,702,372
126CP	3,702,373
CLASS 176	
3	3,702,163
37	3,702,281
68	3,702,282
CLASS 178	
5.2R	3,702,374
5.4TE	3,702,375
5.4P	3,702,377
5.4R	3,702,376
5.8R	3,702,378
CLASS 179	
15BS	3,702,379
27FF	3,702,381
27D	3,702,380
100.2R	3,702,382
100.2T	3,702,383
CLASS 181	
23	3,702,123
CLASS 182	
14	3,702,124
CLASS 188	
71.8	3,702,125
251M	3,702,126
CLASS 192	
18B	3,702,127
CLASS 195	
28R	3,702,283
CLASS 198	
64	3,702,128
180	3,702,129
181	3,702,130
202	3,702,131
CLASS 200	
19A	3,702,384
31	3,702,385
CLASS 204	
15	3,702,284
30	3,702,285
	3,702,286
83	3,702,287
181	3,702,288
	3,702,289
192	3,702,290
CLASS 206	
1R	3,702,132
CLASS 208	
57	3,702,291
80	3,702,292
139	3,702,293
	3,702,294
321	3,702,295
341	3,702,296
CLASS 209	
81A	3,702,133
CLASS 210	
40	3,702,297
242	3,702,134
270	3,702,135
CLASS 211	
60T	3,702,136
176	3,702,137
CLASS 214	
1R	3,702,138
38C	3,702,139
622	3,702,140
CLASS 219	
10.55	3,702,386
91	3,702,387
121EB	3,702,388
	3,702,389
146	3,702,390
553	3,702,391
CLASS 221	
77	3,702,164
CLASS 222	
153	3,702,165
CLASS 223	
85	3,702,166
CLASS 224	
42.1E	3,702,167
CLASS 226	
110	3,702,168
CLASS 228	
2	3,702,169
CLASS 229	
15	3,702,170
79	3,702,171
CLASS 235	
61.7B	3,702,392
156	3,702,393
183	3,702,394
CLASS 239	
18	3,702,172
204	3,702,173
265.11	3,702,174
422	3,702,175
CLASS 240	
41.3	3,702,395
CLASS 242	
47.01	3,702,176
CLASS 244	
110A	3,702,177
CLASS 246	
248	3,702,396
CLASS 248	
9	3,702,178
430	3,702,179
CLASS 249	
188	3,702,180
CLASS 250	
43.5R	3,702,397
49.5A	3,702,398
49.5B	3,702,399
65T	3,702,400
210	3,702,401
216	3,702,402
218	3,702,403
219LG	3,702,404
CLASS 251	
171	3,702,304
CLASS 252	
51.5A	3,702,300
51.5R	3,702,299
56S	3,702,301
70	3,702,302
163	3,702,303
187R	3,702,305
305	3,702,306
356	3,702,307
417	3,702,308
430	3,702,310
441	3,702,309
	3,702,311
442	3,702,312
CLASS 254	
86H	3,702,181
CLASS 260	
2.5N	3,702,313
23H	3,702,314
29.6MQ	3,702,315
38	3,702,316
46.5P	3,702,317
47CP	3,702,318
77.5B	3,702,320
210R	3,702,322
239BD	3,702,321
239.3D	3,702,323
240AL	3,702,325
250R	3,702,326
293.53	3,702,324
293.66	3,702,327
302H	3,702,328
306.7	3,702,329
309	3,702,330
326.9	3,702,331
347.4	3,702,333
347.7	3,702,332
397.4	3,702,334
397.45	3,702,335
429R	3,702,336
462R	3,702,337
468.5	3,702,338
482R	3,702,339
515H	3,702,340
527N	3,702,341
537N	3,702,342
561S	3,702,344
586B	3,702,343
617H	3,702,319
669R	3,702,346
674A	3,702,347
675.5	3,702,348
683.15D	3,702,345
830R	3,702,349
835	3,702,350
	3,702,351
878B	3,702,352
CLASS 263	
29	3,702,182
41	3,702,183
CLASS 264	
3D	3,702,353
	3,702,354
92	3,702,355
141	3,702,356
289	3,702,357
CLASS 266	
13	3,702,184
CLASS 269	
32	3,702,185
CLASS 270	
6	3,702,186
CLASS 271	
29	3,702,187
CLASS 272	
57A	3,702,188
CLASS 273	
73J	3,702,189
94R	3,702,190
112	3,702,191
CLASS 274	
4A	3,702,192
CLASS 277	
209	3,702,193
CLASS 280	
11.35T	3,702,194
104	3,702,195
111	3,702,196
502	3,702,197
515	3,702,198
CLASS 285	
55	3,702,199

CLASSIFICATION OF PATENTS

CLASS 287	
52.05	3,702,200
CLASS 292	
338	3,702,201
CLASS 293	
89	3,702,202
CLASS 294	
87.2	3,702,203
CLASS 297	
248	3,702,204
CLASS 303	
21A	3,702,205
21R	3,702,206
22A	3,702,207
CLASS 307	
109	3,702,405
144	3,702,406
233	3,702,407
CLASS 308	
10	3,702,208
CLASS 310	
4	3,702,408
CLASS 312	
196	3,702,209
198	3,702,210
257SK	3,702,211
CLASS 313	
61D	3,702,409
66	3,702,410
198	3,702,411
299	3,702,412
CLASS 315	
3.5	3,702,413
82	3,702,415
111	3,702,416
CLASS 316	
3	3,702,212
CLASS 317	
2F	3,702,417
13A	3,702,418
61	3,702,419
	3,702,420
99	3,702,421
101CC	3,702,422
101D	3,702,423
140	3,702,424
151	3,702,425
230	3,702,426
234R	3,702,427
235R	3,702,428
CLASS 318	
227	3,702,429
468	3,702,430
471	3,702,431
CLASS 321	
45R	3,702,432
CLASS 322	
28	3,702,433
CLASS 323	
20	3,702,434
22SC	3,702,435
CLASS 324	
10	3,702,436
158F	3,702,437
	3,702,438
158P	3,702,439
CLASS 325	
55	3,702,440
CLASS 328	
14	3,702,441
CLASS 329	
103	3,702,442
CLASS 330	
28	3,702,443
	3,702,444
CLASS 331	
107G	3,702,445
111	3,702,446
CLASS 332	
3	3,702,447
CLASS 333	
30R	3,702,448
CLASS 335	
206	3,702,449
213	3,702,450
CLASS 336	
60	3,702,452
62	3,702,453
70	3,702,451
CLASS 337	
77	3,702,454
CLASS 339	
17C	3,702,455
198G	3,702,457
198H	3,702,456
CLASS 340	
52R	3,702,458
62	3,702,459
150	3,702,460
172.5	3,702,462
	3,702,463
173LT	3,702,465
173SP	3,702,464
173R	3,702,466
174.1E	3,702,461
200	3,702,467
237S	3,702,468
248A	3,702,469
324A	3,702,470
347P	3,702,471
359	3,702,472
409	3,702,473
	3,702,474
CLASS 343	
7.3	3,702,475
17.1PF	3,702,476
112C	3,702,477
702	3,702,478
705	3,702,479
715	3,702,480
844	3,702,481
CLASS 346	
74ES	3,702,482
	3,702,483
CLASS 350	
105	3,702,213
150	3,702,214
	3,702,215
215	3,702,216
CLASS 351	
106	3,702,217
167	3,702,218
CLASS 356	
244	3,702,219
CLASS 415	
119	3,702,220
CLASS 416	
191	3,702,221
212	3,702,222
CLASS 417	
375	3,702,223
CLASS 424	
84	3,702,358
93	3,702,359
263	3,702,361
288	3,702,360
322	3,702,362
	3,702,363
324	3,702,364
	3,702,365
336	3,702,366
CLASS 425	
71	3,702,224
112	3,702,225
326	3,702,226
466	3,702,227
CLASS 430	
448.5	3,702,036

CLASSIFICATION OF DESIGNS

D 2—	361	225,044
	385	225,043
D 6—	12	225,045
	157	225,046
D 8—	138	225,047
D 9—	28	225,048
	187	225,049
	220	225,050
D13—	1	225,051
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		225,053
		225,054
		225,055
D23—	77	225,056
D25—	1	225,057
D26—		225,058
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		225,065
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		225,067
	5	225,068
	14	225,069
D34—	5	225,070
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		225,072
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		225,074
D39—	1	225,075
D44—	9	225,076
	26	225,077
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D45—	10	225,079
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		225,081
D48—	24	225,083
	32	225,082
D52—	3	225,084
D56—	4	225,085
D71—	1	225,086
D72—		225,087
D83—		225,088
		225,089
		225,090
D87—		225,091
D90—	20	225,092

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

96—	56.4	T904,003
	84	T904,017
	91R	T904,005
	131	T904,015
99—	2ND	T904,004
117—	76A	T904,013
	218	T904,006
161—	254	T904,016
204—	109	T904,009
252—	503	T904,012
260—	33.6UA	T904,001
	80.78	T904,010
	471R	T904,011
264—	45	T904,007
340—	365C	T904,008
423—	450	T904,002
	598	T904,014

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1
Alaska	2
American Samoa	3
Arizona	4
Arkansas	5
California	6
Canal Zone	7
Colorado	8
Connecticut	9
Delaware	10
District of Columbia	11
Florida	12
Georgia	13
Guam	14
Hawaii	15
Idaho	16
Illinois	17
Indiana	18
Iowa	19
Kansas	20
Kentucky	21
Louisiana	22
Maine	23
Maryland	24
Massachusetts	25
Michigan	26
Minnesota	27
Mississippi	28
Missouri	29
Montana	30
Nebraska	31
Nevada	32
New Hampshire	33
New Jersey	34
New Mexico	35
New York	36
North Carolina	37
North Dakota	38
Ohio	39
Oklahoma	40
Oregon	41
Pennsylvania	42
Puerto Rico	43
Rhode Island	44
South Carolina	45
South Dakota	46
Tennessee	47
Texas	48
Utah	49
Vermont	50
Virginia	51
Virgin Islands	52
Washington	53
West Virginia	54
Wisconsin	55
Wyoming	56
U.S. Air Force	57
U.S. Army	58
U.S. Navy	59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	3,702,016
	3,702,049
	3,702,197
6 :	3,702,013
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	3,702,070
	3,702,073
	3,702,076
	3,702,090
	3,702,110
	3,702,113
	3,702,121
	3,702,125
	3,702,144
	3,702,173
	3,702,174
	3,702,180
	3,702,189
	3,702,220
	3,702,221
	3,702,239
	3,702,241
	3,702,255
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	3,702,290
	3,702,312
	3,702,324
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	3,702,356
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	3,702,394
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	3,702,405
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	3,702,462
	3,702,469
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	3,702,273
	3,702,382
9 :	3,702,098
	3,702,140
	3,702,141
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	3,702,205
	3,702,242
10 :	3,702,292
11 :	3,702,018
12 :	3,702,014
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13 :	3,702,017
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	3,702,306
	3,702,404
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	3,702,166
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	3,702,203
	3,702,236
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	3,702,272
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	3,702,293
	3,702,294
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	3,702,092
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	3,702,328
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	3,702,474
19 :	3,702,386
	3,702,477
20 :	3,702,051
	3,702,311
	3,702,317
	3,702,475
22 :	3,702,038
	3,702,142
	3,702,230
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23 :	3,702,304
24 :	3,702,072
	3,702,181
	3,702,200
	3,702,252
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	3,702,353
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	3,702,476
25 :	3,702,087
	3,702,103
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	3,702,159
	3,702,160
	3,702,214
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	3,702,361
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36 :	3,702,020
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38 :	3,702,161
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	3,702,235
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41 :	3,702,136
	3,702,188
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42 :	3,702,019
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	3,702,104
	3,702,129
	3,702,147
	3,702,154
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	3,702,191
	3,702,204
	3,702,238
	3,702,266
	3,702,267
	3,702,299
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	3,702,336
	3,702,345
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	3,702,408
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	3,702,463
45 :	3,702,015
	3,702,231
47 :	3,702,453
48 :	3,702,128
	3,702,134

3,702,198
3,702,224
3,702,259
3,702,262
3,702,296
3,702,301
3,702,349
3,702,359
3,702,472
49 : 3,702,143
3,702,340
51 : 3,702,078
53 : 3,702,029
3,702,088
54 : 3,702,164
3,702,243
3,702,331
3,702,370
55 : 3,702,089
3,702,100
3,702,179

DESIGN PATENTS

6 : 225,047
225,069
225,070
225,071
225,083
225,089
225,090
8 : 225,088
12 : 225,084
17 : 225,048
225,057
225,065
225,077
225,078
225,080
225,081
225,082
225,085
18 : 225,072
225,073
21 : 225,044
25 : 225,056
26 : 225,049
34 : 225,043
225,053
225,091
36 : 225,045
225,052
225,054
225,055
225,058
225,059
225,060
225,061
225,062
225,063
225,064
225,066
225,067
225,079
225,086
39 : 225,050
225,075
42 : 225,046
48 : 225,051
225,087
51 : 225,074

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

1 : T904,004
4 : T904,017
10 : T904,010
T904,013
T904,014
36 : T904,003
T904,005
T904,009
T904,015
37 : T904,008
39 : T904,002
42 : T904,006
T904,016
47 : T904,011
51 : T904,001

U.S. GOVERNMENT PRINTING OFFICE: O—1972

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE
November 14, 1972 Volume 904 Number 2

CONTENTS

Page

Patent Notices

Disclaimer and Dedication 136
Dedications 136
Certificates of Correction for the Week of November 14, 1972 136
Disclaimers 136
Erratum 136
Condition of Patent Applications 137

Patents Granted

General and Mechanical 138
Chemical 207
Electrical 232
Design Patents Granted 262
Index of Patentees . . . . PI 1
Index of Designs . . . . PI 17

Classification of

Patents . . . . PI 19
Designs . . . . PI 20

Geographical Index of Residence of Inventors

Patents . . . . PI 21
Designs . . . . PI 22

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PATENT OFFICE NOTICES

Disclaimer and Dedication

3,637,012.—*Phillip S. Sizer,* Dallas, and *Harry E. Schwegman,* Richardson, Tex. WELL FLOW CIRCULATING METHODS. Patent dated Jan. 25, 1972. Disclaimer and dedication filed Mar. 9, 1972, by the assignee, *Otis Engineering Corporation.*

Hereby enters this disclaimer to claims 1, 2, 3, and 4 and dedicates the remainder of the term to the Public.

Dedications

3,574,189.—*Kenneth Butler,* Waterford, Conn. SYNTHETIC PENICILLINS. Patent dated Apr. 6, 1971. Dedication filed Oct. 13, 1971, by the assignee, *Pfizer Inc.*

Hereby dedicates to the Public the entire term of the above-identified patent.

3,594,261.—*Arthur B. Broerman,* Bartlesville, Okla. NONWOVEN FABRIC AND METHOD OF MANUFACTURING SAME BY PERFORATING A THERMOPLASTIC SHEET WITH A LASER BEAM. Patent dated July 20, 1971. Dedication filed Dec. 28, 1971, by the assignee, *Phillips Petroleum Company.*

Hereby dedicates the remaining term of the patent to the Public.

Certificates of Correction for the Week of Nov. 14, 1972

Re. 27,186
3,338,304
3,523,370
3,537,645
3,556,215
3,576,179
3,584,706
3,595,867
3,597,022
3,602,369
3,602,748
3,604,730
3,607,388
3,608,139
3,609,481
3,610,183
3,610,592
3,611,104
3,614,321
3,615,302
3,615,430
3,615,438
3,615,510
3,615,974
3,616,842
3,617,330
3,618,813
3,619,184
3,619,289
3,619,318
3,620,321
3,620,729
3,620,775
3,622,117
3,622,416
3,623,048
3,623,773
3,624,369
3,624,439
3,624,646
3,624,824
3,625,064
3,626,202
3,626,460
3,626,679
3,627,249
3,627,350
3,627,916
3,628,160
3,628,475
3,628,882
3,629,314
3,629,489
3,630,450
3,630,686
3,631,745
3,631,996
3,632,148
3,633,024
3,633,376
3,634,034
3,634,299
3,634,653
3,636,620
3,636,633
3,637,013
3,637,356
3,637,890
3,638,182
3,638,507
3,638,605
3,638,670
3,639,162
3,639,354
3,640,556
3,641,714
3,644,550
3,644,761
3,645,304
3,646,323
3,649,094
3,649,376
3,649,882
3,649,989
3,650,270
3,651,265
3,653,408
3,653,796
3,654,620
3,655,210
3,655,393
3,656,089
3,659,188
3,660,551
3,660,985
3,661,206
3,661,983
3,663,311
3,663,541
3,665,080
3,666,127
3,666,659
3,667,933
3,668,369
3,671,861
3,672,346
3,673,210
3,674,895
3,675,093
3,676,063

Disclaimers

3,092,345.—*Richard W. Clayton,* Toms River, and *Arnel E. Jackson,* Audubon, N.J. BRAKING MECHANISMS. Patent dated June 4, 1963. Disclaimer filed July 27, 1972, by the assignee, *Radio Corporation of America.*

Hereby enters this disclaimer to all of the claims of said patent.

3,103,187.—*Wallace W. Hammel, Jr.,* Chattanooga, Tenn. PHOTOCELL CONTROLLED PATTERN ATTACHMENT FOR TUFTING MACHINES. Patent dated Sept. 10, 1963. Disclaimer filed May 22, 1972, by the assignee, *The Singer Company.*

Hereby enters this disclaimer to claim 1 of said patent.

3,270,016.—*Max Duennenberger,* Frenkendorf, Basel-Land, *Hans Rudolf Biland,* Basel, and *Christian Luethi,* Munchenstein, Switzerland. NEW ARYL-1,3,5-TRIAZINES. Patent dated Aug. 30, 1966. Disclaimer filed Apr. 11, 1972, by the inventors, the assignee, *Ciba-Geigy AG,* assenting.

Hereby enters this disclaimer to claims 1–3, all of the claims of said patent.

3,294,999.—*Frans van Hekken,* East Lampeter Township, Lancaster County, Pa. CATHODE RAY TUBE. Patent dated Dec. 27, 1966. Disclaimer filed Feb. 2, 1972, by the assignee, *Radio Corporation of America.*

Hereby enters this disclaimer to claims 6 and 7 of said patent.

3,446,654.—*Bruce P. Barth,* Round Brook and *Edward G. Hendricks,* Belle Mead, N.J. STRUCTURAL ELEMENTS COMPRISING ADHERENT THERMOPLASTIC POLYARYLENE POLYETHER AND AN ADHEREND AND METHOD FOR MAKING THE SAME. Patent dated May 27, 1969. Disclaimer filed Oct. 26, 1971, by the assignee, *Union Carbide Corporation.*

Hereby enters this disclaimer to claims 6 and 18 of said patent.

3,525,689.—*Ralph Marotta,* St. Louis, Mo. ORGANIC LIQUIDS THICKENED WITH SILICA-SILICATE MATERIALS. Patent dated Aug. 25, 1970. Disclaimer filed Apr. 3, 1972, by the assignee, *Monsanto Company.*

Hereby enters this disclaimer to claims 1 and 6 of said patent.

3,590,419.—*Carl J. Dargene,* Rockford, Ill. QUICKLY ATTACHABLE AND DETACHABLE HINGE ASSEMBLY. Patent dated July 6, 1971. Disclaimer filed July 24, 1972, by the assignee, *Amerock Corporation.*

Hereby enters this disclaimer to claims 18 and 25 of said patent.

3,591,058.—*Mack S. Johnston,* Rolling Hills, Calif. TAPPING DEVICE FOR BEER KEGS AND THE LIKE. Patent dated July 6, 1971. Disclaimer filed Apr. 13, 1972, by the assignee, *Draft Systems, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Jan. 25, 1983.

3,598,897.—*William Castic,* Elkgrove Village, Ill. CONDUIT FITTING FOR PENDENT LIGHT FIXTURES. Patent dated Aug. 10, 1971. Disclaimer filed July 27, 1972, by the assignee, *Harvey Hubbell Incorporated.*

Hereby enters this disclaimer to claims 1, 2, 7, 8, 9, 10, 14, 15, 16, and 17 of said patent.

3,638,039.—*Vallon Wei-Loong Chen,* Edison, N.J., and *Hiroshi Amemiya,* Morrisville, Pa. OPERATION OF FIELD-EFFECT TRANSISTOR CIRCUITS HAVING SUBSTANTIAL DISTRIBUTED CAPACITANCE. Patent dated Jan. 25, 1972. Disclaimer filed Mar. 24, 1972, by the assignee, *RCA Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to Dec. 21, 1988.

Erratum

All references to Patent Number 3,698,018 to Donald P. Shiley, Pivoted discoid heart valve having a changing pivot axis, appearing in the OFFICIAL GAZETTE of Oct. 17, 1972, should be deleted as the application should not have been issued.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF OCTOBER 17, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries. Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	8-19-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-02-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-09-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director Coating: Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-09-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—Director (Vacant) Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	5-04-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	2-23-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	8-11-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-01-71
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—Director (Vacant) Receptacles; Joint Packing: Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-16-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-26-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director Industrial Arts: Household, Personal and Fine Arts.	3-18-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-01-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	8-02-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	9-23-71
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	11-01-71
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	8-19-71

Expiration of patents: The patents within the range of numbers indicated below expire during November 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,721,999 to 2,725,557, inclusive
Plant Patents	Numbers 1,427 to 1,435, inclusive

PATENTS

GRANTED NOVEMBER 14, 1972

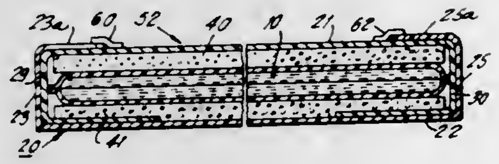
GENERAL AND MECHANICAL

3,702,484

LIGHT-WEIGHT, MINIMUM-VOLUME WATER PAD

Sidney Tobinick, Oldbridge, and Arnold Semenoff, Fort Lee, both of N.J., assignors to Aqua Therm Products Corporation, Rahway, N.J.

Filed Nov. 18, 1971, Ser. No. 199,853
Int. Cl. A47c *27/08*
U.S. Cl. 5—348 WB **18 Claims**



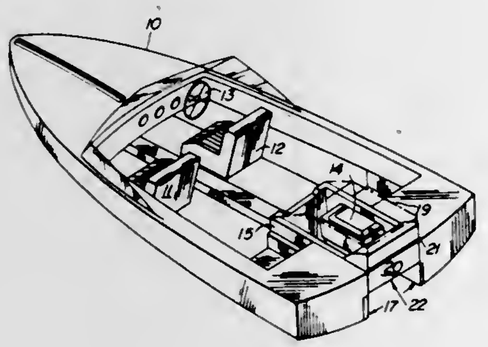
A low-water volume, low-weight water pad for use as a mattress or seat pad consists of a water-filled container sandwiched between an upper and lower layer of cellular foam sheets with a surrounding water-impervious sheath which is loaded through openings in the top of the sheath. The sheath serves as a flexible frame and tray for containing water which may escape from the water-filled container. The top surface of the sheath contains flaps at either end which extend beyond the opening slits in the top of the sheath. These flaps are enveloped inside of the sheath and around the bottom of the foam layer. When used as a mattress, it may be placed directly on a conventional inner spring. A rigid platform is shown which is placed between water mattress and inner spring to provide a flat surface for support of the water mattress.

3,702,485

OUTBOARD MOTORBOAT WITH INBOARD MOUNT

Theodore G. Thompson, Homer, N.Y., assignor to Chris-Craft Industries, Inc., Pompano Beach, Fla.

Filed Dec. 7, 1970, Ser. No. 95,529
Int. Cl. B63b *3/04*
U.S. Cl. 9—6 **4 Claims**



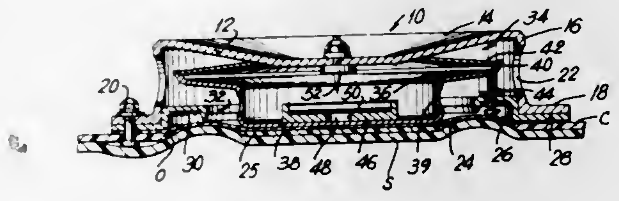
An outboard motorboat has an inboard mounting well. A gate in the transom of the boat vents engine fumes and precludes entry of sea water when the boat motion is reversed. The well functions as a channel in the bottom of the hull for directing a stream of water through the propeller and for reducing the hull surface area in contact with the water.

3,702,486

SAFETY RUPTURE ASSEMBLY

Alfred C. Barmasse, Northridge, and Edmund A. Jachacz, Panorama City, both of Calif., assignors to American Safety Equipment Corporation, Encino, Calif.

Filed Sept. 23, 1970, Ser. No. 74,611
Int. Cl. B63b *9/22*
U.S. Cl. 9—11 A **10 Claims**



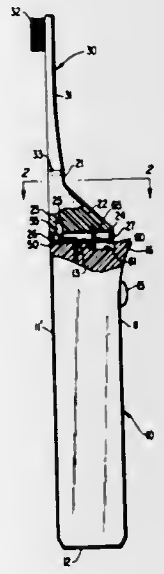
An assembly for rupturing and thereby deflating a life raft situated in its storage compartment in an airplane, when the raft is accidently inflated. The rupture assembly includes a blade and a diaphragm immediately adjacent to the raft. The diaphragm is held away from the blade by a spring resistance. Inflation of the raft causes the diaphragm to move towards the blade overcoming the spring resistance so that the blade cuts through the diaphragm and into the raft to deflate it.

3,702,487

CIRCULARLY SWEEPING TOOTHBRUSH

Thomas Sung, 217 Park Row, New York, N.Y.

Filed March 29, 1971, Ser. No. 128,902
Int. Cl. A46b *13/02*
U.S. Cl. 15—22 R **8 Claims**



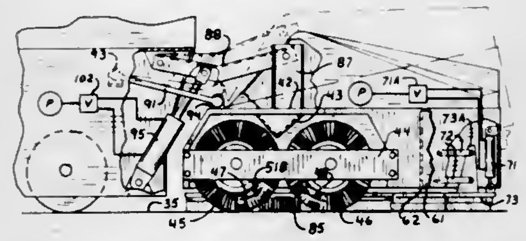
A circularly movable mechanical toothbrush having a crank-shaped drive shaft and a reciprocative connecting means that maintains the bristles disposed at all times toward selected teeth, compactingly massages gums during a gradual approach stroke, aligns the bristles with tooth striations and interdental spaces during a sweeping brush stroke, and keeps the bristles disposed away from the user's cheek during a return stroke.

3,702,488

SCRUBBING MACHINE

Joseph G. Kasper, Minneapolis, Minn., assignor to Tennant Company, Minneapolis, Minn.

Filed Sept. 15, 1970, Ser. No. 72,275
Int. Cl. A47l *11/292*
U.S. Cl. 15—50 C **31 Claims**



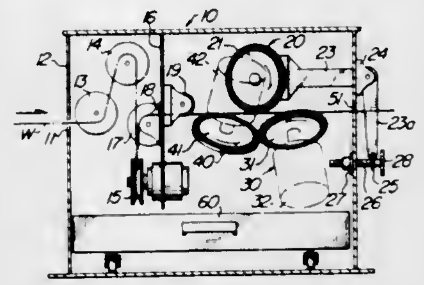
A scrubbing machine having a drive unit on which an operator can sit, and a separate scrubbing unit mounted for movement independently of the frame of the drive unit. The scrubber uses double brushes driven under power which will pick up debris from and scrub surfaces on which the unit is operating. The drive unit as shown operates on a dry surface because the scrubbing unit is trailing.

3,702,489

APPARATUS FOR MECHANICALLY REMOVING THE SCALE FROM THE PERIPHERAL SURFACE OF A HOT ROLLED WIRE MATERIAL

Yoshimi Nakamura, Ashiya, and Heijiro Kawakami, Kobe, both of Japan, assignors to Kobe Steel, Ltd., Kobe-shi, Japan

Filed Oct. 30, 1970, Ser. No. 85,341
Claims priority, application Japan, Oct. 31, 1969, 44/87311
Int. Cl. A46b *13/02*
U.S. Cl. 15—88 **1 Claim**



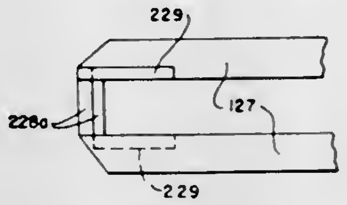
A hot rolled wire material is first moved along a meandering path of travel defined by a plurality of sheaves to remove loose scale particles and is then brought into rubbing contact with rotating brushing wire wheels arranged around the run of the wire material in angularly and axially spaced relationship with each other with respect to the axis of the wire material so that the remaining scale is substantially completely removed. Each wire wheel has its plane of rotation inclined at an angle with respect to the run of the wire material.

3,702,490

DETACHABLE WINDSHIELD WIPER BLADE UNIT

William J. Quinlan, 935 North Toffee Drive, and Lawrence L. Huver, 1111 North Boltwood Street, both of Hastings, Mich. Division of Ser. No. 90,938, Nov. 19, 1970, and a continuation-in-part of Ser. No. 883,928, Dec. 10, 1969, Pat. No. 3,616,485, which is a continuation-in-part of Ser. No. 725,325, April 30, 1968, Pat. No. 3,541,629. This application Oct. 14, 1971, Ser. No. 189,160
Int. Cl. B60s *1/02*
U.S. Cl. 15—250.42 **26 Claims**

A flexible wiper element supported by a resiliently flexible backing strip. In some embodiments the wiper element and backing strip are bonded together. In other embodiments the backing strip includes a pair of transversely spaced strip members which retain the wiper element therebetween. Longitudinal edge portions of the backing strip are embraced by the usual claws of a wiper pressure unit, and longitudinally spaced detents are provided on the backing strip to releasably or snap-fittingly receive one of the claws between them, thereby to releasably hold the blade unit and pressure unit in assembled relation.

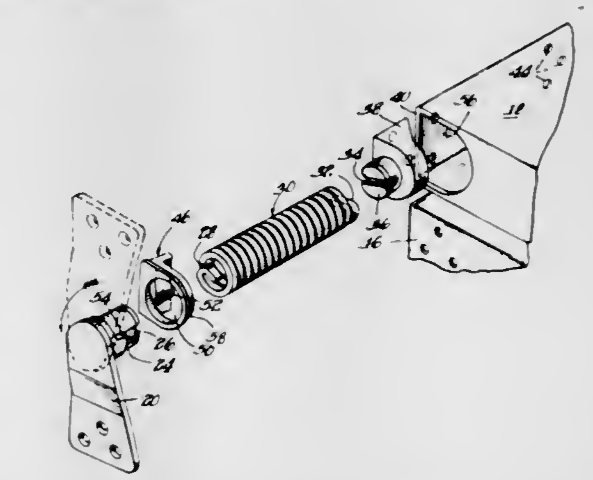


3,702,491

SPRING HINGE DEVICE

Thomas James Pelletiere, Des Plaines, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed July 10, 1970, Ser. No. 53,843
Int. Cl. E05f *1/12*
U.S. Cl. 16—189 **5 Claims**



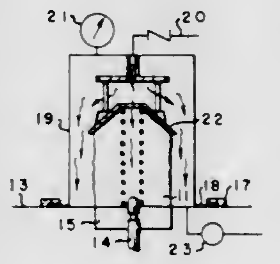
The present invention relates generally to spring hinge devices and more particularly to improvements in spring hinge devices for use with a top opening cabinet having a tiltable lid such as a freezer cabinet. One practical embodiment of the invention disclosed in the present application includes a bracket member attachable to the vertical wall of a cabinet and a second bracket member attachable to the fixed margin of a tiltable cabinet lid. Spring coupling elements fixed to said brackets are designed to detachably accommodate opposite extremities of a substantially horizontal coil spring, said spring serving to counterbalance the weight of the cabinet lid.

3,702,492

YARN BULKING METHODS

Larry N. Pearce, Oak Park, Ill., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed June 22, 1970, Ser. No. 48,034
Int. Cl. D02g *1/00*
U.S. Cl. 28—72 HR **12 Claims**



A method of bulking yarn in package form comprises subjecting yarn in a substantially tensionless package to a heated fluid at a super atmospheric pressure. Also apparatus for performing the method and the bulked package.

3,702,493

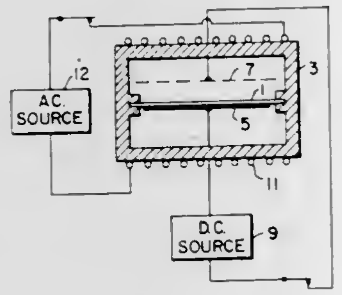
METHOD OF MAKING AN ELECTRET

Preston V. Murphy, Weston, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Division of Ser. No. 25,539, April 3, 1970, Pat. No. 3,612,778, Continuation-inopart of Ser. No. 638,463, May 15, 1967, abandoned. This application March 4, 1971, Ser. No. 120,858

Int. Cl. H01s *4/00*

U.S. Cl. 29—592 9 Claims



A method of making electrets, comprising the steps of (1) internal polarization of a selected thermoplastic using an ionized gas, produced by a high frequency electric field, to contact one surface and serve as one electrode while a metal film serves as a second electrode, and applying a constant electric bias while the material is heated to a softened condition and then gradually cooled, and (2) by a secondary process, applying an electrostatic charge to the exposed dielectric surface of the electret.

3,702,494

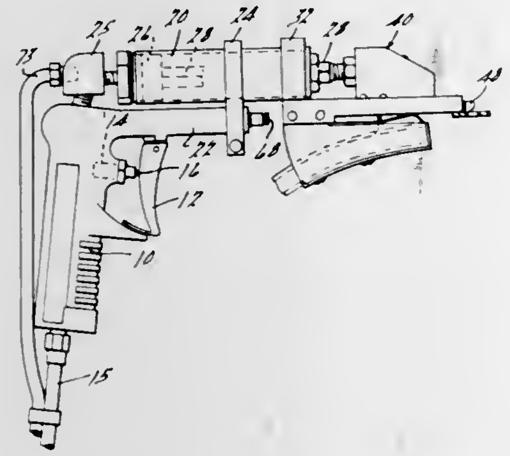
FASTENER APPLYING TOOL

Robert A. Munse, Troy, Mich., assignor to Microdt, Inc., Greenwich, Conn.

Filed May 6, 1971, Ser. No. 140,658

Int. Cl. B23p *19/04*

U.S. Cl. 29—225 14 Claims



A tool for applying resilient C-type clips to the edges of perforated panels for the reception of screw-type fasteners includes a pair of locating fingers adapted to overlie the surface of the panel, to locate the tool against vertical displacement, a hook-type locator engageable in the fastener-receiving aperture in the panel for horizontal and radial alignment, and a pusher adapted to hold a clip prior to installation and to force the clip into overengaged relation with the panel in registry with the fastener aperture. The stroke of the pusher is so related to the position of the hook-type locator and to the proportions of the clip that actuation of the pusher through a full stroke moves the clip into registry with the aperture in the panel regardless of the distance between such aperture and the edge of the panel.

3,702,495

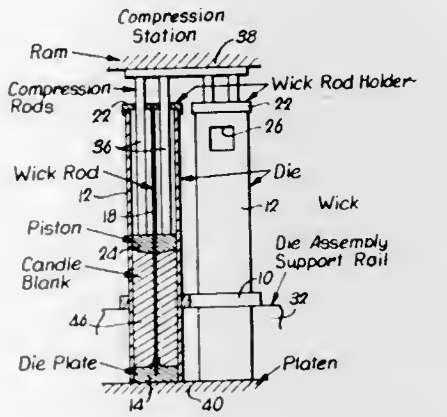
METHOD OF PRODUCING COMPRESSION MOLDED CANDLES

Ronald R. Renoe, Mission, Kans., assignor to Hallmark Cards, Incorporated, Kansas City, Mo.

Filed Sept. 8, 1970, Ser. No. 70,390

Int. Cl. B28b *3/02*

U.S. Cl. 29—428 19 Claims



A method and apparatus for forming a candle from a particulate wax material utilizes a compressive force of at least 2,000 p.s.i. to form the material into a self-sustaining body for a freestanding candle comparable in strength and appearance to a cast candle of the same size. The extremely high pressure forms the particulate material into a candle body wherein the amount of entrapped air is minimized for maximum color density and elimination of granular surface appearance as opposed to prior methods of compression molding where only partial compression resulted in candles each having a surface where the particulate nature of the starting wax material is clearly visually evident. The method is carried out utilizing an open-ended mold, one end of which has been closed and into which a wick rod has been inserted for forming a wick hole in the candle blank. Particulate wax material is introduced into the mold and a piston is moved against the material under a pressure of 2,000 to 10,000 p.s.i. The closed end of the mold is then opened after which the candle blank is ejected. A candlewick is then inserted into the hole in the blank to complete the candle.

3,702,496

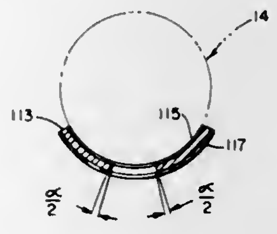
METHOD FOR MANUFACTURING MASKS TO BE USED FOR ORNAMENTING GLASS ARTICLES IN AN ABRASIVE BLASTING PROCESS

Charles Edward Stevens, East Grand Rapids, Mich., assignor to John M. Exton, Trustee of the trust known for business purposes as the Exton Development Company, New York, N.Y.

Filed Aug. 24, 1970, Ser. No. 66,465

Int. Cl. B23k *31/02*

U.S. Cl. 29—472.9 12 Claims



A method of manufacturing masks to be used for ornamenting a curved surface of a glass article in an abrasive blasting process, includes forming a laminate comprising a metal backing plate and plastic sheet to the curve of the article to be ornamented. After the mask has been curved, the desired design is cut, preferably with the mask openings diverging outwardly from the surface of the mask which is adapted to contact the glass article.

3,702,497

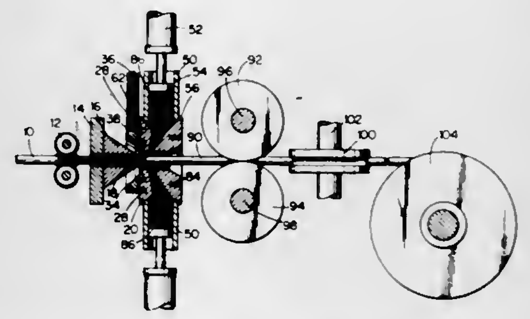
MANUFACTURE OF CLAD METALS

Paul A. Dion; Paul O. Hagarman, both of North Attleboro, Mass., assignors to Polymetallurgical Corp., Attleboro, Mass.

Filed Jan. 7, 1971, Ser. No. 104,701

Int. Cl. B21d *39/04*

U.S. Cl. 29—474.3 12 Claims



A continuous process for cladding a metal core rod with a dissimilar metal sheath. Contaminants are removed from the periphery of a moving length of core rod. While the core rod is maintained contaminant-free, a thin annular sheath of cladding metal is extrusion bonded around the periphery of the core rod to produce a clad rod suitable for subsequent drawing into wire without the need for sintering, metal removal or other finishing operations on the clad rod.

3,702,498

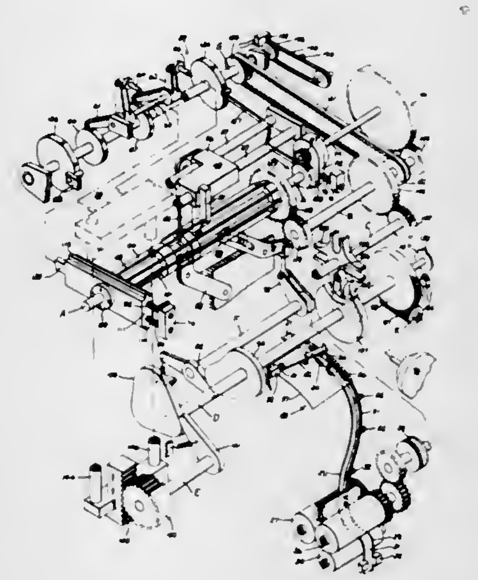
APPARATUS AND METHOD FOR PROVIDING INSULATION IN THE SLOTS OF MAGNETIC CORES

Lowell M. Mason, Fort Wayne, Ind., assignor to General Electric Company

Filed May 18, 1971, Ser. No. 144,426

Int. Cl. H02k *15/00, 15/14, 15/16*

U.S. Cl. 29—596 15 Claims



Apparatus and method for producing formed pieces of insulation and for placing formed pieces of insulation into nonradially aligned or otherwise irregularly oriented slots of a magnetic core. Dielectric strip material is fed to a sizing and forming station by a strip accumulating and urging device, and dielectric material pieces of preselected sizes are formed. The pieces are formed on a preselected forming device as a core is aligned relative to the forming member so that the insulation pieces may be inserted into a core slot which the insulation piece has been particularly formed to fit. Preferred form of apparatus includes compensating means for selectively positioning a core support relative to a datum plane of the apparatus. This means, in one form, includes a first drive member that tends to drive a driven member through a fixed angular increment. The driven member is movable about a preselected movable reference point which in turn is movable differential amounts relative to the pitch of drive line of the first drive member so that the driven member is selectively movable through a preselected net differential increment of travel relative to a fixed increment of travel of the first drive member.

3,702,499

METHOD OF MANUFACTURING A COIL

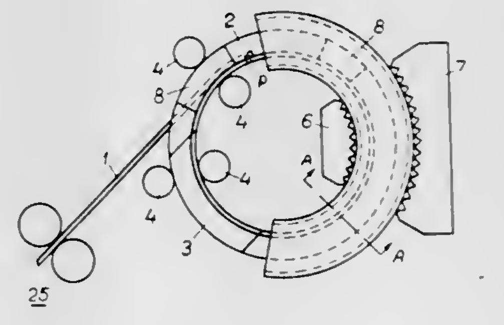
Lars-Goran Virsbreg, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Feb. 16, 1971, Ser. No. 115,290

Claims priority, application Sweden, Feb. 24, 1970, 2335/70

Int. Cl. H01f *7/06*

U.S. Cl. 29—605 11 Claims



A coil having several turns of an insulated conductor is provided with a shrinkage tube of insulating material by producing such relative movement between the conductor and the tube that the end of the conductor passes into the tube and through it a number of times until a portion of all the coil turns is enclosed within the tube. The tube, which may be corrugated to shorten its length during the winding operation, is then heated beginning at one end and expands along and contracts over the wound coil.

3,702,500

METHOD FOR OBTAINING ELECTRICAL CONNECTIONS, ESPECIALLY FOR MICROCIRCUITS

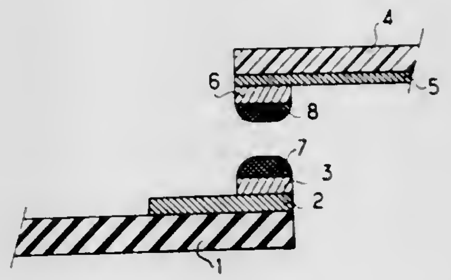
Guy G. Gorinas, Saint Michel-sur-orge, and Jean C. A. Regal, Montlucon, both of France, assignors to Societe Alsacienne De Constructions Atomiques De Telecommunications Et D'Electronique "Alcatel", Paris, France

Filed July 30, 1970, Ser. No. 59,397

Claims priority, application France, July 31, 1969, 6926367

Int. Cl. H01r *43/00;* **H05k**

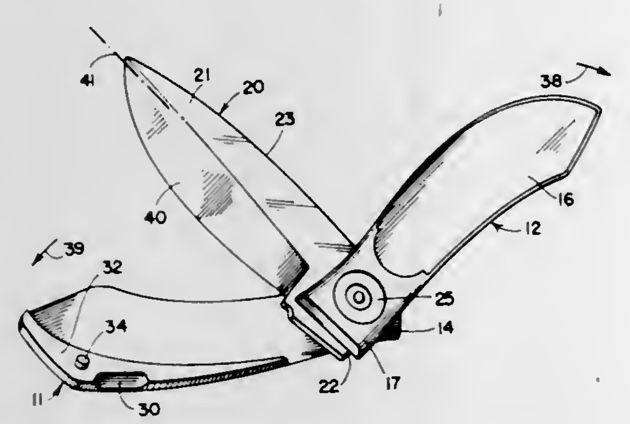
U.S. Cl. 29—628 1 Claim



An electrical connection is formed by coating two conductors with a metal capable of forming an amalgam with mercury, forming an amalgam by immersing the coated conductors in a mercury bath, withdrawing them thereby leaving a small meniscus of excess mercury on each amalgam, and placing the meniscuses of mercury in contact with each other.

3,702,501
SPLIT HANDLE JACK KNIFE

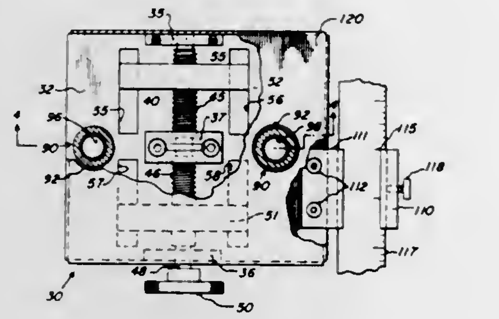
Barry Bertram Wood, 38 So. Venice Blvd., Venice, Calif.
Filed Nov. 20, 1968, Ser. No. 777,270
Int. Cl. B26b *1/04*
U.S. Cl. 30—153 **1 Claim**



A jack knife has a pair of handle half sections that can be split apart and rotated 180° to move a blade back and forth between its stored and exposed positions. The handle half sections become locked together as a unitary handle when the blade is in its stored and exposed positions.

3,702,502
PRESS BRAKE GAUGE

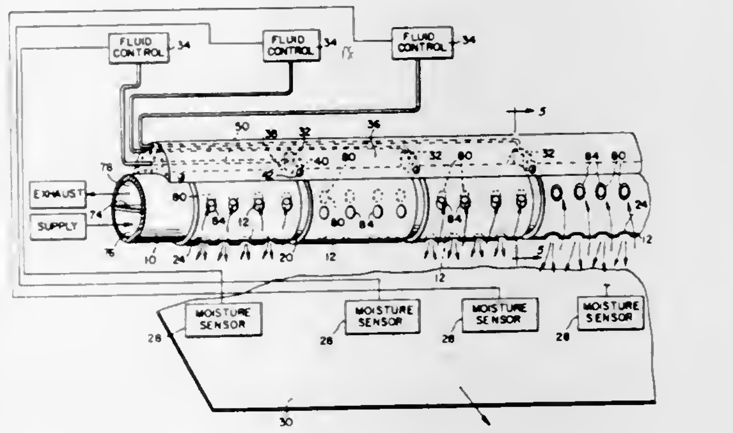
Thomas E. Kelleher, 1361 Regan Road, New Lenox, Ill.
Filed April 20, 1971, Ser. No. 135,621
Int. Cl. B27g *23/00*
U.S. Cl. 33—185 R **10 Claims**



A press brake gauge adapted to locate the center of a female die element to insure alignment between male and female die elements to enable accurate measurements to a backstop of a press brake from either the male or female die element. The gauge incorporates a flat base with a pair of downwardly projecting flange members which are adjustably positioned in the base equidistant from a reference point which is shiftable relative to a line which passes through a pair of depending slidably pin elements having feeler tips. The gauge is adapted to fit on the top of a die element to locate the center of the female die and through adjustment of the flanges to enable the flanges to engage the sides of the die for an accurate reference. The gauge includes an adjustable scale which is mounted thereon and referenced to an indicia directed through the center of the slidable pins. A cooperating die element is positioned on top of the base and is adapted to cooperate with the male die element of a press brake. The apex of the notch in the male adaptor on top of the gauge is aligned with the slidable pins to insure alignment between male and female die elements of the press brake.

3,702,503
MATERIAL DRYING APPARATUS

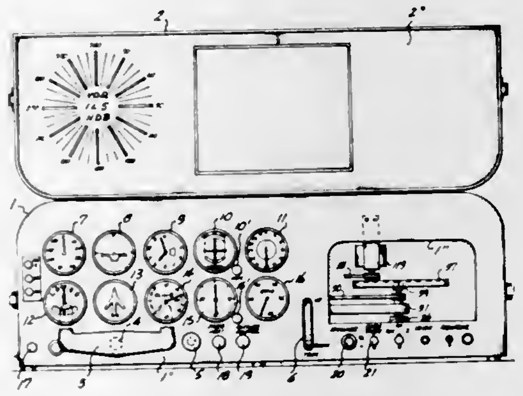
John A. Nichols, Stoughton, Mass., assignor to Mill Industries Inc.
Filed Dec. 18, 1970, Ser. No. 99,375
Int. Cl. F26b *11/02*
U.S. Cl. 34—114 **13 Claims**



Material drying apparatus for uniformly drying moist, moving material, such as a paper web. The apparatus includes an inner fixed tubular conduit having at least two rows of apertures extending in a substantially axial direction along the conduit and having an inlet at one or both ends for passing a hot gaseous medium, such as hot air. A plurality of individually rotatable outer sleeve members are axially disposed around and along the inner conduit, and each of the outer sleeve members has at least two rows of apertures for selective movement into communication with predetermined ones of the inner conduit apertures whereby the hot gaseous medium passes through the communicating apertures to dry the material and whereby the passage of the hot gaseous medium is excluded by the sleeve members having apertures not in communication with respective apertures of the inner conduit.

3,702,504
AIRCRAFT INSTRUMENT OPERATION TRAINER

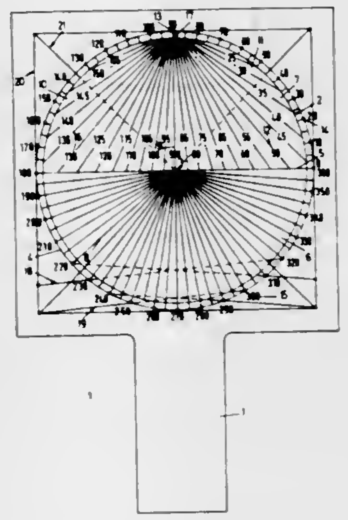
Harry E. Cramer, Seattle, Wash., assignor to Cramer Instrument Flight School, Inc., Seattle, Wash.
Filed June 17, 1970, Ser. No. 46,871
Int. Cl. G09b *9/08*
U.S. Cl. 35—12 W **4 Claims**



On one side of a portable case are mounted aircraft instruments, a control wheel and a throttle to simulate the instrument panel and controls of an airplane. The control wheel and throttle are movable and interconnected by compound lever mechanism which is connected to actuate the tachometer, the airspeed indicator, the artificial horizon elevationally, the rate-of-climb indicator and the altimeter. The control wheel is connected independently of the compound lever to actuate the turn indicator, the tilting of the artificial horizon, the directional gyro, a VHF omnirange indicator, a course recorder and an automatic direction finder.

3,702,505
EDUCATIONAL AID

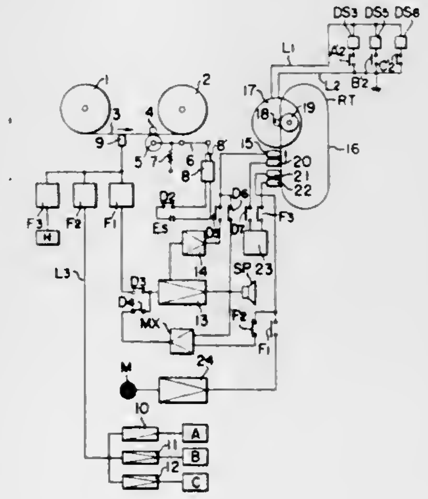
Andreas Hadjigeorghiou, 69 Ferndale Road, London S.W.4, England
Filed Aug. 19, 1971, Ser. No. 173,192
Claims priority, application Great Britain, Aug. 26, 1970, 40,992/70
Int. Cl. G09b *23/04*
U.S. Cl. 35—34 **7 Claims**



An educational aid for use in illustrating various geometrical properties of a circle comprises a baseboard having a circle inscribed thereon, pins around the circumference of the circle and at the center of the circle so that endless rubber or elastic bands can be placed around the pins to define angles at the center and at the circumference of the circle, and a rotatable disc concentric with the circle so that the bands overlie the disc. One half of the disc is divided by radial lines into sectors for measuring angles at the center of the circle. The other half of the disc has lines radiating from a common point on the circumference of said circle for measuring angles at the circumference of the circle.

3,702,506
MAGNETIC RECORDING-REPRODUCING DEVICE CAPABLE OF AUTOMATIC REPETITIVE REPRODUCTION

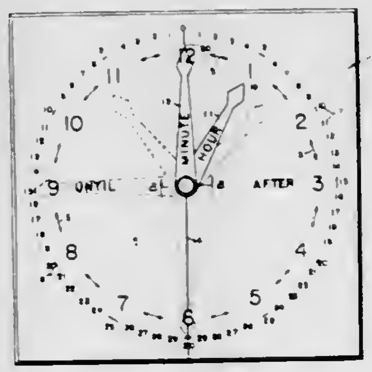
Takeshi Goshima; Yasutaka Iwawaki, and Yutaka Kohtani, all of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 18, 1970, Ser. No. 90,639
Claims priority, application Japan, Nov. 27, 1969, 44/94843
Int. Cl. G09b *5/04*
U.S. Cl. 35—35 C **16 Claims**



A magnetic recording-reproducing device capable of automatic repetitive reproduction, especially suitable for education or dictation, which uses a master tape for recording thereon information units and tim signals representing the various lengths of such information units, wherein the information units are transferred from the master tape onto an endless magnetic recording medium whose velocity of movement may be varied in accordance with the time signals on the master tape so that the endless magnetic recording medium may be driven to move round at a velocity corresponding to the length of each information unit to be transferred thereonto, whereafter each transferred information unit may be repeatedly reproduced with simple operation of a necessary switch.

3,702,507
VISUAL TEACHING DEVICE FOR TELLING TIME

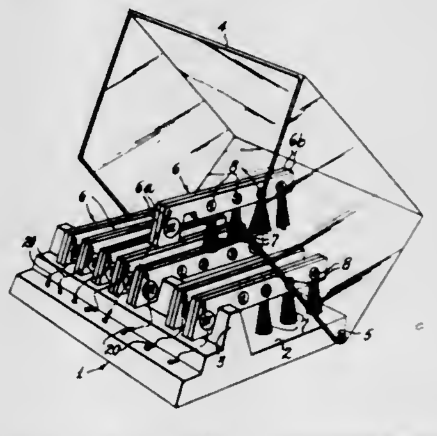
Herbert R. Romey, 640 Capitol Street S.E., Salem, Oreg.
Filed Nov. 30, 1970, Ser. No. 93,792
Int. Cl. G09b *19/12*
U.S. Cl. 35—39 **1 Claim**



A manipulatory device as a visual aid for teaching children to tell time. The device comprises a base plate whose top surface represents the face of a clock provided with an hour hand and a minute hand of unlike colors and individually rotatable about a common pivot. The hours are indicated by peripherally arranged standard numerals 1 to 12, of a color matching that of the hour hand. Concentrically arranged numerals, of a color matching that of the minute hand, designate minutes from 12 to 12:30 on the clock face and in reverse order from 12:30 to 12:00. A dividing line from the hour numeral 6 to the hour numeral 12 divides the clock face into a left hand segment marked UNTIL and a right hand segment marked AFTER.

3,702,508
DEVICE FOR DISPLAYING SAMPLE LOCKS OF DYED HAIR

Pierre Netter, Neuilly sur Seine, France, assignor to L'Oreal, Paris, France
Filed Nov. 23, 1970, Ser. No. 91,936
Claims priority, application France, Dec. 1, 1969, 6941327
Int. Cl. G09f *5/02*
U.S. Cl. 35—59 **6 Claims**

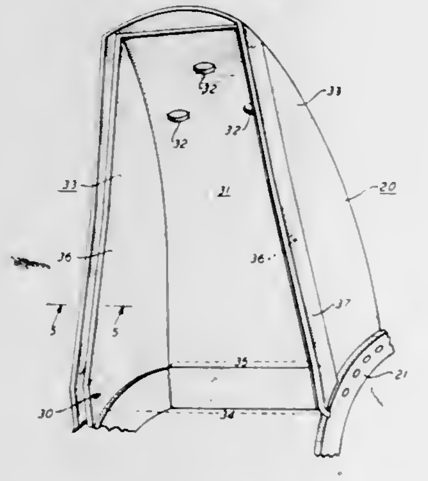


Device for displaying sample locks of dyed hair comprises a base carrying a horizontal ridge, and a plurality of lock supports hooked onto the ridge, each lock support being made of two strips defining therebetween a plurality of narrow-necked recesses in which the bases of the locks of hair are secured.

3,702,509

TRENCHING MACHINE WITH TAPERED BUCKETS

Joseph G. Zowaski, deceased, late of Peach Tree Lane, Goshen, N.Y. (by Jeanne Zowaski, administratrix)
Continuation of Ser. No. 763,288, Sept. 27, 1968, abandoned. This application Sept. 8, 1970, Ser. No. 70,413
Int. Cl. E02f *5/08*
U.S. Cl. 37—97 **6 Claims**

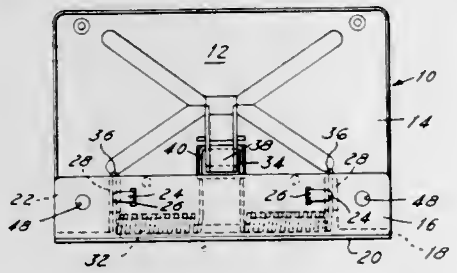


A trench digging device having novel structural features facilitating trench digging operation including a movable continuous digging unit having buckets, each bucket being formed so as to cause the earth to fall into instead of out of the bucket and forming a continuous keying form into which earth is pressed in two planes as the bucket scoops the earth and facilitates sliding out of the earth at the proper medial position of rotation.

3,702,510

LICENSE PLATE SUPPORT AND PIVOTABLE COVER MEMBER

Walter Genyk, Birmingham; Raymond E. Martin, Southfield; George B. Swift, Dearborn Heights; Robert L. Wiggins, Livonia, and Raymond W. Wolfe, Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Sept. 17, 1970, Ser. No. 72,938
Int. Cl. G09f *7/00*
U.S. Cl. 40—209 **10 Claims**

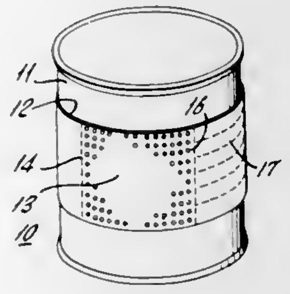


A license plate support and pivotable cover member has as the principle element thereof a generally U-shaped license plate support member formed in a plastic molding operation. One leg of the member is connected to the cross arm of the member by a living hinge, the hinge being formed in the plastic molding operation. One leg of the member provides structure for attaching the member to a motor vehicle while the other leg of the member provides a license plate support structure. A spring is mounted between the attachment leg and the support leg of the member for biasing these two legs to their generally U-shaped configuration. When the attachment leg of the member is secured to a vehicle, the license plate support leg may be pivoted away therefrom by force but will return to a normal position when freed of the force.

3,702,511

PROOF-OF-PURCHASE LABEL

Murray Edwin Miller, Morristown, N.J., assignor to Iroquois Promotion, Cranford, N.J.
Filed Oct. 26, 1970, Ser. No. 84,075
Int. Cl. G09f *3/10*
U.S. Cl. 40—306 **13 Claims**

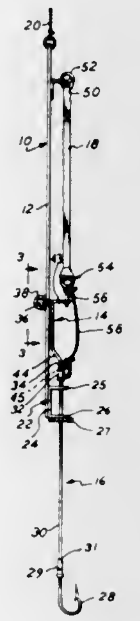


Several embodiments are disclosed of proof-of-purchase labels. In one embodiment, a label made from a material having high wet strength is perforated to divide the label into areas. Each of the areas are affixed to goods with adhesives. Some areas are affixed to the goods with an epoxy adhesive while another area is affixed to the goods with an adhesive soluble in hot water. In a second embodiment, a sheet of mylar is affixed to goods by an epoxy adhesive while a high wet-strength label is adhered to the outer surface of the mylar label with an adhesive soluble in hot water.

3,702,512

FISH CATCHING INSTRUMENTALITY

Vincent B. Hodshire, 2701 N.E. Adams Street, Peoria, Ill.
Filed May 17, 1971, Ser. No. 144,130
Int. Cl. A01k *97/00*
U.S. Cl. 43—15 **14 Claims**

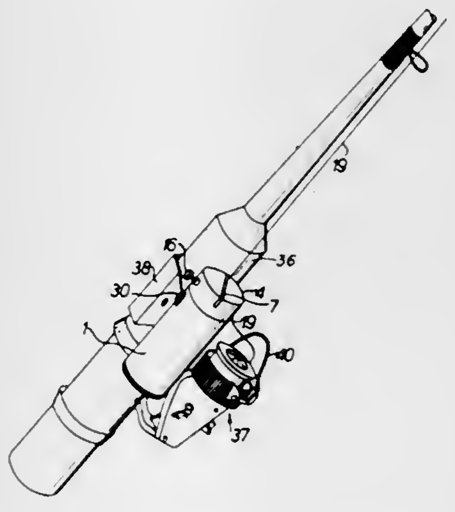


A fish catching instrumentality, including means for selectively adjusting the tension on a dual set trigger lever mechanism, to provide for variable release of a relay trigger lever fish engaging member. The dual set trigger lever mechanism includes a trigger lever with first and second arm portions. The trigger lever is pivotally mounted to a frame on which the relay trigger lever fish engaging member is mounted. In one form of the invention, resilient means adjustably engage the first arm of the trigger lever while the second arm releasably retains the relay trigger lever fish engaging member in a cocked position. By adjusting the engagement between the resilient means and the first arm of the lever, the tension to release the relay trigger lever fish engaging member can be varied. In another form of the invention, the resilient means may adjustably engage the second arm.

3,702,513

BITE DETECTORS FOR USE WITH FISHING LINES

Peter J. Watts, Baldhu House, 38 Polkyth Road, St. Austell, Cornwall, England
Filed Sept. 17, 1970, Ser. No. 73,143
Int. Cl. A01k *97/12*
U.S. Cl. 43—17 **8 Claims**

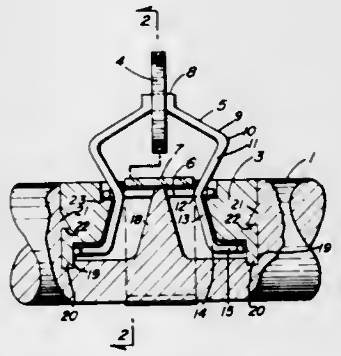


A bite detector device comprising a casing having a slot in an exposed face attached to a fishing rod and housing a pair of nipper elements which are spring-urged towards each other within the slot and arranged to releasably grip part of a fishing line disposed in the slot. The nipper elements are held apart as long as the line is held therebetween. When the line, under a predetermined tension, is jerked free of the nipper elements, the latter come together to initiate an alarm. Preferably the nipper elements are conductive and complete an indicator circuit when they contact each other.

3,702,514

FISHING ROD LINE GUIDE AND MOUNTING

Thomas C. Donato, Route 6 Box 2090, Lakeland, Fla.
Filed April 24, 1970, Ser. No. 31,579
Int. Cl. A01k *87/04*
U.S. Cl. 43—24 **5 Claims**



A replaceable fishing rod line guide and mounting which permits broken or worn line guides of similar manufacture to be quickly and easily replaced, either in the field or at home. The device comprises four resilient wire legs which are set into a rectangular recess in the body of a fishing rod and support a line guide thereon. The legs are locked in place in the recess by a slotted cylindrical locking ring which encircles the rod between the legs with the slot positioned away from the recess but which is rotatable around the rod to align the slot with the recess for removal of the legs therefrom.

3,702,515

TELEPHONE-TALKING DOLL SIMULATOR

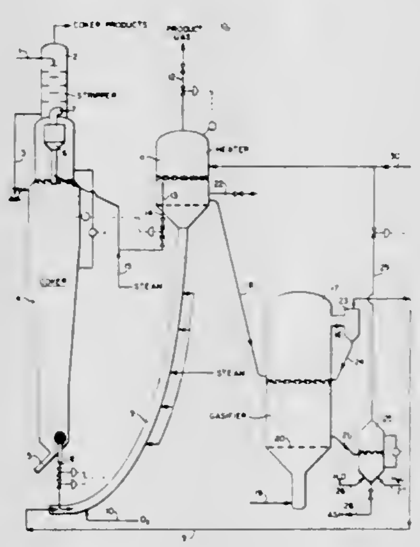
Noel F. Beasley, Santa Monica, and Ray Wever, La Canada, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 3, 1972, Ser. No. 214,802
Int. Cl. A63h *3/28*
U.S. Cl. 46—232 **12 Claims**

Talking doll holds a first simulated telephone handset camouflaging a switch for actuating a phonograph in the doll. A second simulated handset includes a switch actuator and is connected to the first simulated handset and the switch in the doll, whereby phonograph may be actuated by manipulating second simulated handset.

3,702,516

GASEOUS PRODUCTS OF GASIFIER USED TO CONVEY COKE TO HEATER

Edward C. Luckenbach, Mountainside, N.J., assignor to Esso Research and Engineering Company
Filed March 9, 1970, Ser. No. 17,802
Int. Cl. C10j *3/16*
U.S. Cl. 48—206 **4 Claims**



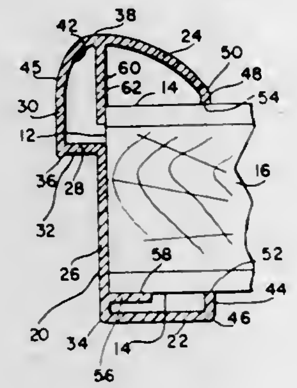
In a fluid coking process in which the coke is substantially completely gasified, solids are conveyed from the coker to the heater, supplying both the coker and gasifier, by means of the fuel gas produced in the gasifier. The solids may be inert or the coke produced by the process.

3,702,517

PLASTIC DOOR FRAME

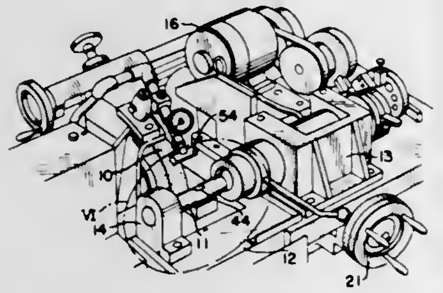
Robert I. Martin, 27 E. Ferdinand Street, Manheim, Pa.
Filed Dec. 3, 1970, Ser. No. 94,822
Int. Cl. E06b *1/26, 1/28, 1/34*
U.S. Cl. 49—504 **5 Claims**

A unitary, plastic door frame for defining the head and jambs of a door opening. Each frame member includes a first, stepped wall section adapted to overlie an end face of a wall with the step defining a surface extending outwardly in a transverse direction from the end face to constitute a door stop. The first stepped wall section extends outwardly beyond the edges defining the end face of the wall and is joined at its ends to second and third wall sections respectively. The second and third wall sections extend transverse to the first wall section and substantially in the same direction therefrom to overlie, in spaced relationship, the side faces of the wall extending from the edges of the end face of the wall. Inturned flanges extend from the ends of the second and third wall sections for engaging the side faces of the wall. Stabilizing wall members are joined to the first stepped wall section adjacent to the second and third wall sections. The stabilizing wall member adjacent to the second wall section has a substantially flat surface adapted to engage the side face of the wall, and the stabilizing wall member adjacent the third wall section has a substantially flat surface adapted to engage the end face of the wall.



3,702,518
AUTOMATIC GRINDING APPARATUS FOR MAGNETIC HEADS

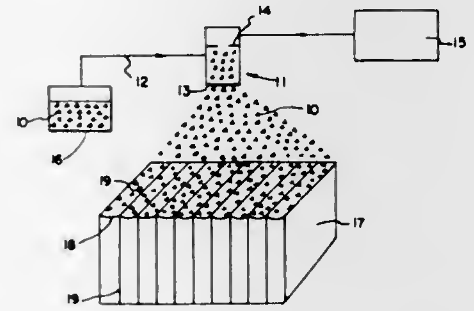
Sadajiro Yamanaka, Chigasaki, Japan, assignor to Yugen Kaisha Yamanaka Seisakusho, Chigasaki-shi, Japan
Filed June 30, 1970, Ser. No. 51,101
Claims priority, application Japan, July 15, 1969, 44/56018
Int. Cl. B24b *5/00*
U.S. Cl. 51—165.8 **2 Claims**



An oscillating shaft for holding a magnetic head to be worked is mounted on a reciprocating table in opposed relation to a rotary grinding wheel. The reciprocating table is controllably moved toward the grinding wheel, whereby the magnetic head is ground by the grinding wheel. During the grinding operation, the magnetic impedance of the magnetic head being worked is continuously measured and the grinding operation is automatically stopped when the measured impedance has reached a predetermined value.

3,702,519
METHOD FOR THE REMOVAL OF UNWANTED PORTIONS OF AN ARTICLE BY SPRAYING WITH HIGH VELOCITY DRY ICE PARTICLES

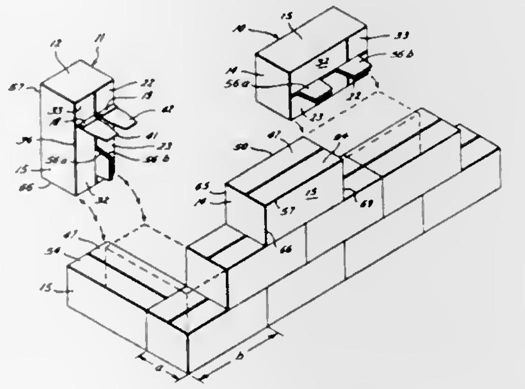
Edwin Eugene Rice, and Charles Henry Franklin, both of Ann Arbor, Mich., assignors to Chemotronics International, Inc., Ann Arbor, Mich.
Filed July 12, 1971, Ser. No. 161,907
Int. Cl. B24c *1/04*
U.S. Cl. 51—310 **15 Claims**



A method for the removal of unwanted portions of an article such as membranes, burrs and flashing utilizing solid particles of dry ice (carbon dioxide at a temperature colder than about −56°C) which are impacted against the unwanted portions is described. Kinetic energy imparted to the dry ice particles causes removal of the unwanted portions of the article upon impact. In addition, the dry ice particles cool the impacted area and with thermoplastic and elastic materials thereby embrittles thin sections of flashing and burrs and the like making them more easily removable by the impact of the dry ice particles.

3,702,520
FOLDABLE CONSTRUCTION BLOCK

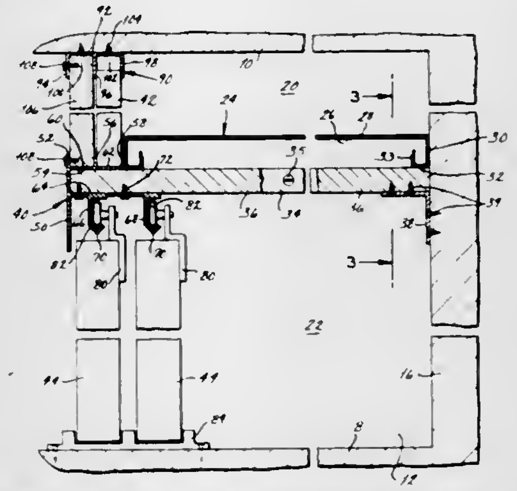
William C. Huber, Seabrook, and Dale L. Ritter, Houston, both of Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, by said Huber
Filed Jan. 18, 1971, Ser. No. 107,298
Int. Cl. E04c *1/10*
U.S. Cl. 52—284 **4 Claims**



A construction block foldable from a flat sheet of material to form a container which may be filled with available solid material and stacked with other such blocks in staggered courses. Interlock tabs project from the center of one horizontal wall of the block and the other horizontal wall is provided with a lateral, central slot arranged to receive interlock tabs from other such blocks. The block may be folded to provide either, two symmetrical lateral interlock tabs for making lateral wall runs, or to provide lateral and transverse tabs for wall corners.

3,702,521
CLOSET CONSTRUCTION

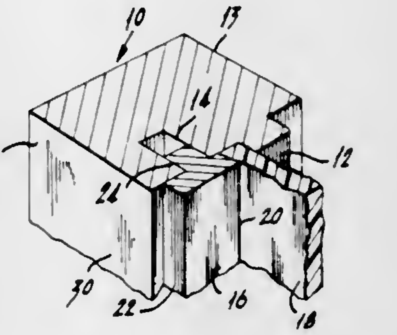
Francis C. Peterson, Affton, Mo., assignor to C. Hager & Sons Hinge Manufacturing Company, St. Louis, Mo.
Filed Sept. 18, 1970, Ser. No. 73,553
Int. Cl. A47b *61/00*
U.S. Cl. 52—36 **7 Claims**



Upper and lower closets are formed at the end of a room by fastening side supports to the side walls of the room near the back wall. A track member is secured at its ends to the side supports and extends across the room from one side wall to the other. A center support is connected between the track member and the back wall and the center support along with the side supports provides subjacent support for a shelf which divides the space between the room ceiling and floor into upper and lower closets. The track member is a unitary structure and includes a set of upper tracks on which upper sliding doors ride and a set of lower tracks from which lower sliding doors are suspended. The upper doors close the upper closet and their upper ends are confined by guide means attached to the ceiling. The lower doors close the lower closet.

3,702,522
WALL CONSTRUCTION

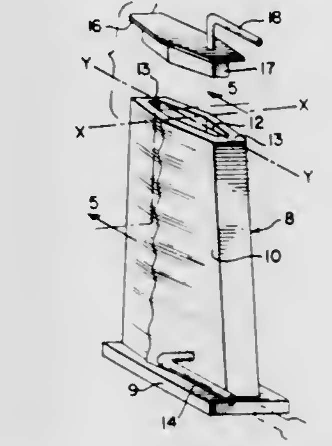
Larry D. Adams, Box 408 Kellers Church Road, Ottsville, Pa.
Filed Aug. 27, 1970, Ser. No. 67,425
Int. Cl. E04b *5/52;* **E06b** *3/54*
U.S. Cl. 52—476 **1 Claim**



A wall construction, particularly but not solely for use as a room divider, or partition, has a rectangular frame defining an opening for a wall panel that may desirably be a translucent, ornamentally configured plastic sheet or the like. Bounding the opening is a rib forming an abutment against which the panel may seat, and cooperating with the rib in clamping the panel in place is a retaining strip, preferably of T-shaped cross section, seated in a groove formed in the frame and laterally spaced from the abutment. The several tongues of the strip are all of different lengths but of the same thickness, so that any one of the tongues or legs can seat in the groove to dispose a selected one of the three tongues in engagement with the panel. The cross member of the T represented by the cross sectional shape of the strip may also bear against the panel. This permits a single strip to be usable for clamping any of four panel thicknesses.

3,702,523
COLUMN CONNECTOR

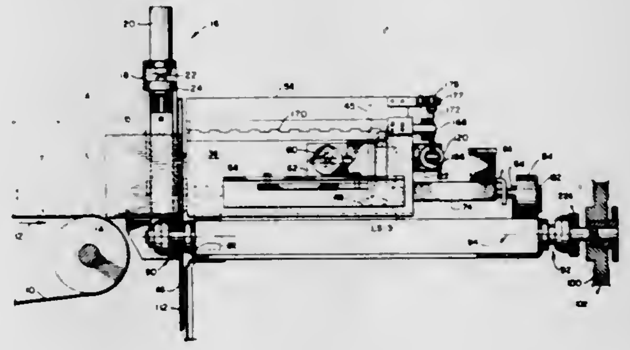
James F. McCaul, III, Birmingham, Ala., and Lloyd A. Compton, Denver, Colo., assignors to Schokbeton Products Corp., Birmingham, Ala.
Filed April 26, 1971, Ser. No. 137,680
Int. Cl. E04c *1/30*
U.S. Cl. 52—583 **4 Claims**



A connector for structural members usually used to connect a column of one story of a building to the column of the story above, the connector having separate male and female parts with both parts having like retaining means in the form of horizontal ridges with grout containing an epoxy cementing agent filling the voids therebetween and where both male and female parts have integral retaining means on that portion displaced in the concrete column for securement thereto and where tapered mating surface are provided on both parts to guide and fix the position of the female portion in relation to the male portion in height and direction of plumb.

3,702,524
CASE LOADER WITH ARTICLE INVERTING MECHANISM

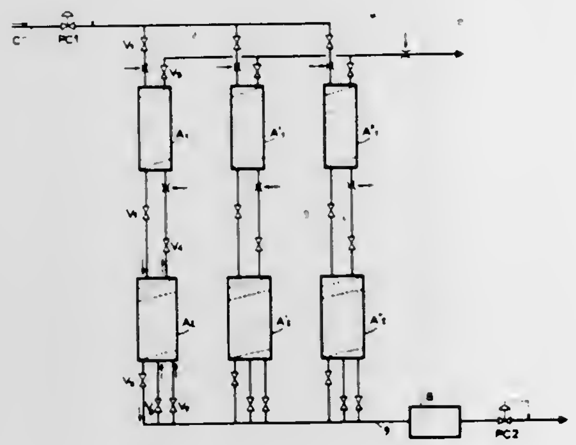
Lloyd D. Johnson; Kenneth E. Kroeber, both of Portland, and John L. Raudat, North Madison, all of Conn., assignors to Emhart Corporation, Bloomfield, Conn.
Continuation of Ser. No. 13,638, Feb. 24, 1970, abandoned. This application Dec. 14, 1970, Ser. No. 97,534
Int. Cl. B65b *57/10*
U.S. Cl. 53—61 **16 Claims**



An infeed conveyor is provided for advancing upright articles in a plurality of lanes across a deadplate and into a lane defining grid as a result of line pressure from the articles advancing on the conveyor. Means is provided above each such lane for braking or holding back the articles on the deadplate so that discrete charges, or slugs of articles, can be formed in the grid. The grid is adapted to be retracted slightly, away from the deadplate, and to be rotated to an inverted position. Hinged doors on the grid are moved into contact with the upper end portions of the upright articles to hold them in the grid as it is so rotated. An empty packing case to be loaded is raised upwardly to receive the inverted articles in the grid, and the doors are then moved to their open positions causing the articles to drop downwardly onto the upwardly open packing case. Two embodiments of the invention are shown, one having a single grid, and the second having a double grid.

3,702,525
IMPROVED GAS PURIFYING PROCESS AND APPARATUS

Guy A. Simonet, and Pierre F. Lesur, both of Paris, France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France
Filed Nov. 30, 1970, Ser. No. 93,718
Claims priority, application France, Dec. 3, 1969, 6941703
Int. Cl. B01d *53/04*
U.S. Cl. 55—25 **5 Claims**

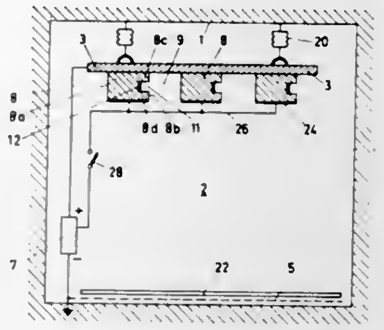


An improved gas purifying process and apparatus, for example, the purification of purging gases originating from an ammonia synthesis installation, with the object of recovering one of the constituents of these gases, for example hydrogen, by means at least one adsorption mass, in which the rise in the pressure following the elution and preceding the isobaric adsorption, is effected in the first chamber by admission of gas to be purified, and is effected simultaneously in the second chamber in two stages, the first of which is a raising of the front to an intermediate pressure by means of a constituent, such as the purified hydrogen, the said isobaric adsorption only starting when the working pressure is reached in the said two chambers, the two chambers being isolated during this operation.

3,702,526
AIR IONIZATION AND CLEANING ARRANGEMENT

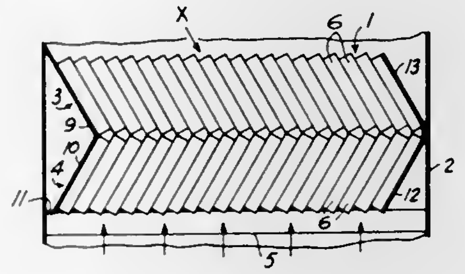
Joseph Eichmeier, Munich, Germany, assignor to Constantin Graf von Berckheim, Weinheim/Bergstrasse, Germany
Continuation-in-part of Ser. No. 657,283, July 31, 1967, abandoned. This application April 15, 1969, Ser. No. 817,613
Claims priority, application Germany, Dec. 24, 1966, B 90478
Int. Cl. B03c *3/38*
U.S. Cl. 55—102 **7 Claims**

An arrangement by which the air within an enclosure is ionized and cleansed. A high voltage source applies a DC potential across two electrodes in which one electrode is suspended from the ceiling, whereas the other electrode is supported by the floor of the enclosure. Radioactive substance is embedded within electrically insulating supporting members secured to the ceiling electrode. The radioactive substance ionizes the air within its proximity, and the ceiling electrode attracts the ions with valence opposite in sign to the potential of the ceiling electrode. The remaining ions are emitted within the space of the enclosure and serve to cleanse the air through removal of dust particles, and to further produce air with particularly desirable characteristics.



3,702,527
PARTICLE SEPARATOR

Ronald Frew, New South Wales, Australia, assignor to The Colonial Sugar Refining Company Limited, Sydney, New South Wales, Australia
Continuation-in-part of Ser. No. 737,927, June 17, 1968, abandoned. This application July 20, 1970, Ser. No. 56,378
Claims priority, application Australia, June 19, 1967, 23330/67
Int. Cl. B01d *45/08*
U.S. Cl. 55—440 **4 Claims**

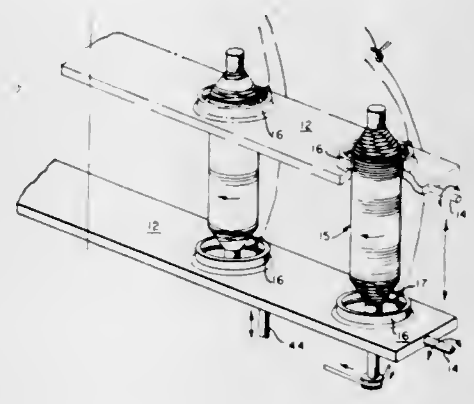


A particle separator of improved efficiency in a duct conveying a gas stream. The separator is of the type having passages deflecting the gas stream one or more times and separating entrained liquid particles therefrom by impingement. According to the invention, the deflecting walls of the passages are formed by one or more substantially pointed corrugations, each corrugation being symmetrically shaped transversely and following its respective passage longitudinally. The particle separator of the invention is particularly suitable for reducing entrained sucrose losses in an evaporator of the type used in the manufacture of raw cane sugar, and in that application the particle separator has the additional advantage that separated liquid (aqueous sucrose) can fall back directly into the boiling liquid of the evaporator without the need to provide separate drainage means.

3,702,528
METHOD FOR RING WINDING YARN ON A PACKAGE AND APPARATUS THEREOF

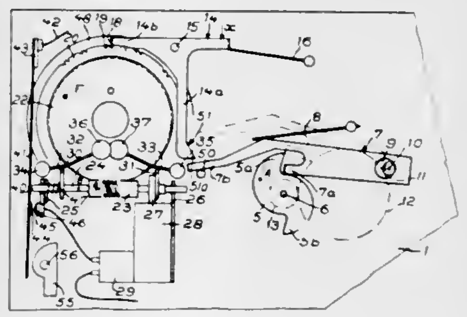
Irby Ennis Hartley, Jr., Chattanooga, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed May 18, 1970, Ser. No. 38,106
Int. Cl. D01h *7/52;* **B65h** *54/36*
U.S. Cl. 57—75 **7 Claims**

A method and apparatus for forming a package of yarn on a bobbin by ring winding wherein a yarn is advanced to a rotating package and wound thereon through a guide free to rotate around a ring being traversed back and forth along the package. The normal position of the plane of the ring with respect to the package axis is changed from a perpendicular to a tilted relationship during each traverse stroke as the traversing means moves through its reversals and is then returned to perpendicular throughout the remainder of the traverse stroke. A linkage mechanism, connected between the traversing means and the ring, mounts the ring for tilting movement and motive means actuated by the traversing means and operative for a predetermined time during a stroke imparts the tilting movement. The package formed is characterized by yarn windings which are laid down substantially parallel to each other in the central portion and in a criss-cross helical pattern in the reversal portions of each layer of the package.



3,702,529
STRIKING MECHANISMS FOR CLOCKS

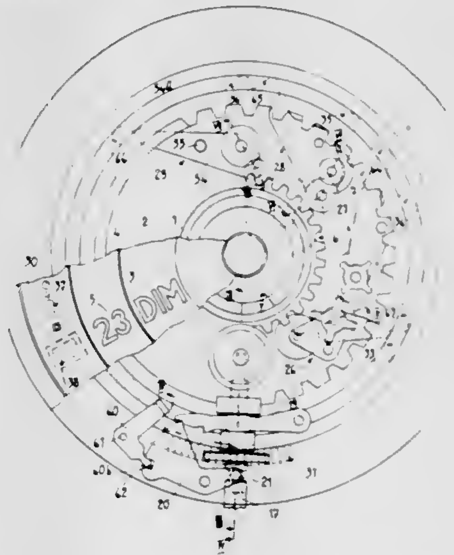
Francois Zeter; Roger Bellardy, both of Saverne; Claude Pouligny, Colmar, and Marc Walter, Bry-sur-Marne, all of France, assignors to Societe Fabrique de Horlogerie la Vedette, Saverne and Societe Jaz S.A., Paris, France
Filed April 30, 1971, Ser. No. 139,034
Claims priority, application France, May 11, 1970, 7017055
Int. Cl. G04b *25/00*
U.S. Cl. 58—9 **14 Claims**



A clock striking mechanism includes a counting wheel having peripheral notches spaced by amounts which differ and related to the number of strikes at each striking action, a gear wheel fast with the counting wheel and meshing with a worm. A cam driven by the minute spindle of the clock movement raises a lever when the hour or half-hour is to be struck and a projection on the lever is raised thus leaving the counting wheel free to rotate. The worm is mounted on a spindle which is arranged to open and close a pair of contacts in a supply circuit of a motor and release of the counting wheel frees the worm and its spindle to close the contacts under the bias of a spring. The motor is energized and rotates the spindle to actuate striking mechanism by means of a cam or cams mounted on the spindle. The worm simultaneously drives the gear wheel and hence the counting wheel and striking ceases when the next notch is reached and the lever projection engages therein.

3,702,530
TIMEPIECE WITH CIRCUMFERENTIALLY INDEXED SETTING POSITIONS

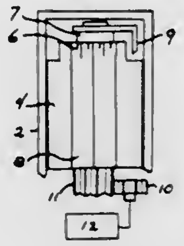
Rene Besson, Neuchatel; Claude Laesser, Boudevilliers, and Daniel Rochat, Neuchatel, all of Switzerland, assignors to Ebauches S.A., Neuchatel, Switzerland
Filed Feb. 4, 1972, Ser. No. 223,664
Claims priority, application Switzerland, Feb. 8, 1971, 1859/71
Int. Cl. G04b *27/00*
U.S. Cl. 58—85.5 **9 Claims**



A timepiece comprising a control stem manually operable, capable of occupying at least two axial positions, characterized by the fact that it comprises a toothed rotatable member, operable by the stem in a first axial position thereof, and a set of control mechanism intended to execute different operations, comprising each a lever capable of occupying two positions, i.e. a rest position and a working position in which a wheel carried by the lever meshes with the toothing of the rotative member coaxial to the movement, a rotatable selecting member, controlled by the stem when it occupies a second axial position, whereby one or the other of the said control mechanism is brought selectively in its working position in which it operates when the stem, brought back in its first axial position, is operated.

3,702,531
TIMEPIECE FOR IDENTIFYING TIME BY COLOR

Marilyn J. Maue, 20 Melwex Street, Belleville, N.J.
Continuation-in-part of Ser. No. 696,940, Jan. 10, 1968, Pat. No. 3,616,643. This application Sept. 2, 1971, Ser. No. 177,276
Int. Cl. G04b *19/00*
U.S. Cl. 58—126 E **22 Claims**



A timepiece is provided by having a cylindrical color carrying member on which is coded a plurality of distinguishable color areas in uniform sections around its circumference, said color areas representing uniform units of time within a time period; a separate and second plurality of sections displayed on the circumference of the cylindrical member to denote a second period of time; an independent reference indicator means adapted to indicate successively each of the color areas and each of the second plurality of sections; and timepiece driving means to impart relative rotation between said indicator means and said cylindrical color carrying member so that each section of the cylindrical member is indicated successively within the desired time period of a plurality of hours, such as a 12 or 24 hour period. At least one period of time, such as the hours of a day or minutes of one hour, is displayed by distinguishable colors while the second time period is displayed by any convenient means of denoting a division, such as markings, numerals, a separate code of colors which are distinguishable from the first color code, a separate code of distinguishable color patterns, colored or non-colored bodies, etc.

3,702,532

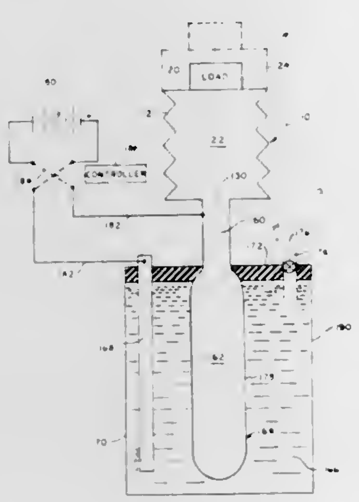
ELECTROLYTIC GAS OPERATED ACTUATOR

George M. Low, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Peter G. Simmonds, 5200 Palm Drive, La Canada, Calif.

Filed March 29, 1971, Ser. No. 129,072

Int. Cl. F03g *7/00*

U.S. Cl. 60—23 **9 Claims**



An actuator incorporating an electrolytic gas generator-evacuator is disclosed. A membrane of material selectively permeable to a drive gas is inserted in a combined inlet-outlet of an expandable chamber. The membrane forms a portion of an electrolytic cell by being immersed in a body of electrolyte capable of transporting an ionic species of the drive gas between the membrane as one electrode and a counter electrode. By connecting the combined inlet-outlet of the chamber to the outside surface of the membrane and cyclically driving the electrolytic cell in a drive gas generation mode and a drive gas evacuation mode, the chamber will cyclically expand and contract.

3,702,533

HOT-GAS MACHINE COMPRISING A HEAT TRANSFER DEVICE

Adrianus Petrus Dirne; George Albert Apolonia Asselman, and Herman Henricus Maria van der Aa, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

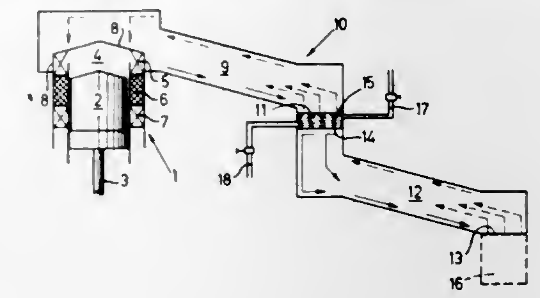
Filed Nov. 27, 1970, Ser. No. 93,104

Claims priority, application Netherlands, Dec. 24, 1969, 6919338

Int. Cl. F03g *7/06*

U.S. Cl. 60—24 **14 Claims**

A hot-gas machine in which a gaseous medium performs a closed thermodynamic cycle, includes a heat conveying device which is capable of conveying heat by means of an evaporation - condensation process from a heat source to the heater of the machine. This device comprises at least two closed spaces containing conveying-medium and arranged one after the other in the direction of heat conveyance, the distal ends of these spaces being provided with heat transferring walls across which heat can be conducted from the heat source to the conveying medium, or the conveying medium can give off heat to the heater; the proximal ends of these spaces comprises further heat-transferring walls, between which a switching element is provided for the establishment of a thermal and variable contact between these further walls.



3,702,534

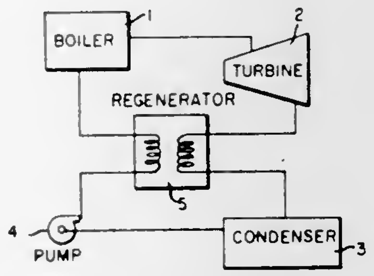
POWER FLUIDS FOR RANKINE CYCLE ENGINES

Max F. Bechtold, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 8, 1971, Ser. No. 113,293

Int. Cl. F01k *25/00*

U.S. Cl. 60—36 **7 Claims**



Perhalogenated benzenes of the formula $C_6Br_xCl_yF_z$ where x is 0–2, y is 0–4, z is 2–4 and $1.5x + y$ is from 2.5 to 4, their isomers and mixtures thereof have a combination of properties which render them suitable for use in small Rankine cycle engines.

3,702,535

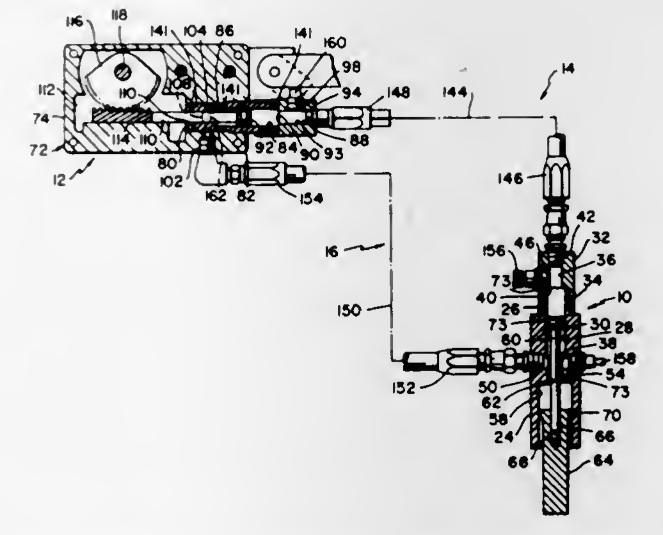
REARVIEW MIRROR

John I. House, 27201 Wellington Drive, Franklin, Mich.

Filed Jan. 15, 1971, Ser. No. 106,688

Int. Cl. F15b *7/00, 15/26*

U.S. Cl. 60—54.5 R **4 Claims**



A remote control actuating mechanism for adjusting the angular position of an outside vehicle rearview mirror. The mechanism comprises a master control device and a slave device, each having a piston reciprocable within a cylinder. Closed hydraulic circuits connect the two devices so that when the control piston is manually moved in one direction or the other, there is a corresponding movement of the slave piston. A rack and gear connection between the slave piston and the mirror causes the mirror to be angularly adjusted in response to movement of the slave piston.

3,702,536

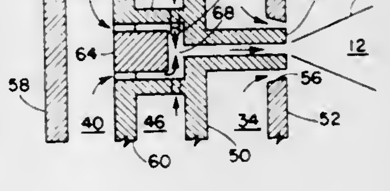
ROCKET THRUST THROTTLING SYSTEM

John W. Gregory, Middleburg Heights, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Jan. 18, 1971, Ser. No. 107,380

Int. Cl. C06d *5/00*

U.S. Cl. 60—211 **9 Claims**



A small vortex fluid amplifier is located at the entrance to the oxidizer tube of a coaxial injector. The vortex fluid amplifier differentially controls the oxidizer flow by means of a variable vortex flow field to throttle the thrust of a rocket engine.

3,702,537

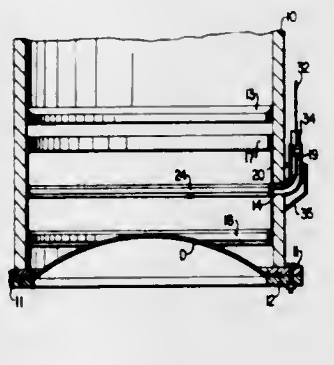
GROUTING SEAL FOR PILING

Don B. Landers, Arlington, Tex., assignor to Oil States Rubber Company

Filed Oct. 14, 1970, Ser. No. 80,564

Int. Cl. E02d *5/14, 5/52;* **F16j** *15/32*

U.S. Cl. 61—46.5 **7 Claims**



A seal for sealing the annular space between the outer surface of a pile and the inner surface of a hollow-member such as a marine platform leg or skirt guide through which the pile is driven, the seal comprising an elastomeric body normally lying against the inner surface of the hollow member and peripherally attached thereto, and a cable encompassing the body such that when the cable is drawn tightly around the body in a central zone between its ends, the body is cinched or drawn into tight engagement with the pile to seal the annulus between it and the hollow member, for instance, while grout is being poured into the annulus and setting.

3,702,538

PARTITIONS IN DOCKS

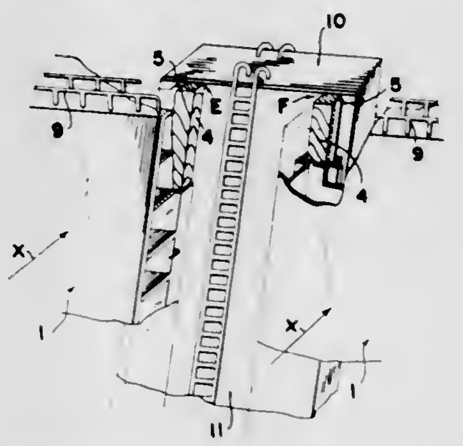
Hisashi Kodama, Tokyo; Tsuneo Sekigawa, Tsu; Kazumi Hata, Tsu, and Akimichi Nakaya, Tsu, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 3, 1970, Ser. No. 94,753

Claims priority, application Japan, Dec. 4, 1969, 44/114631

Int. Cl. B63c *3/00*

U.S. Cl. 61—64 **4 Claims**



The structure in partitions in shipbuilding and repairing docks wherein a plurality of partitions may be connected depending on the width of the dock by brackets especially designed for this purpose.

3,702,539

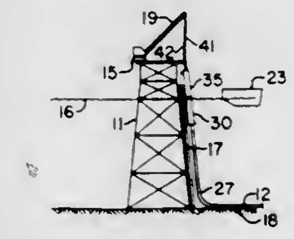
METHOD AND APPARATUS FOR INSTALLING RISERS

Jamie F. Matthews, Jr., Houston, Tex., assignor to Esso Production Research Company

Filed May 26, 1971, Ser. No. 147,090

Int. Cl. F16l *1/00*

U.S. Cl. 61—72.3 **17 Claims**



A riser is installed at an offshore platform where pipeline construction terminates by lowering the riser in place adjacent a guide rail mounted on the platform and thereafter clamping the riser to the guide rail by moving clamps or similar connecting members downwardly on the guide rail and riser from the surface.

3,702,540

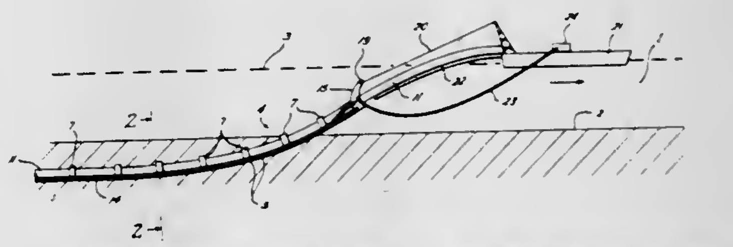
APPARATUS AND METHOD FOR BURYING PIPELINE

Johannes Van Steveninck, Rijswijk, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,521

Int. Cl. F16l *1/00;* **E02f** *5/02*

U.S. Cl. 61—72.4 **3 Claims**

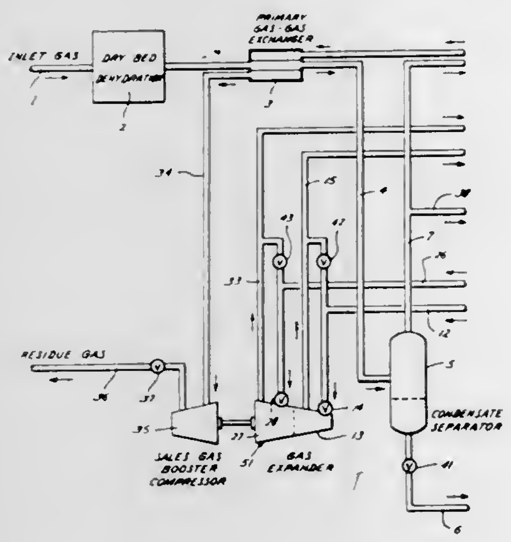


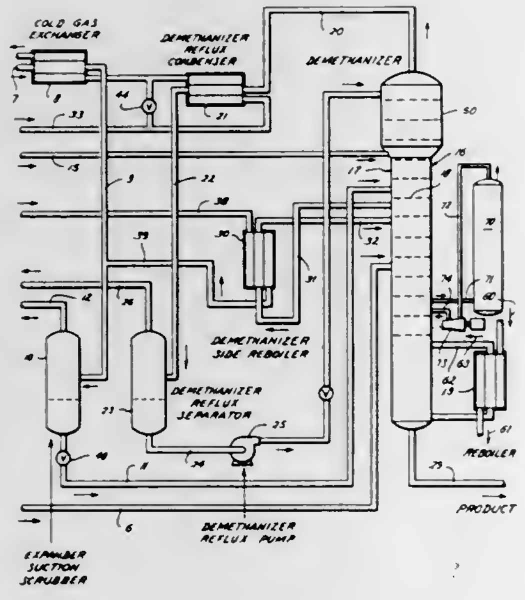
An apparatus for burying a pipeline in the sea bed by fluidizing the bottom material so that the pipeline sinks into the sea bed under its own weight comprises a number of pipes provided with fluidization nozzles along their length for injecting fluid into the sea bed. The pipes are slidably mounted on the underside of the pipeline and pulled along the pipeline as it is laid from a barge.

3,702,541
LOW TEMPERATURE METHOD FOR REMOVING CONDENSABLE COMPONENTS FROM HYDROCARBON GAS

Bill R. Randall, and Jerry G. Gulsby, both of Houston, Tex., assignors to Fish Engineering & Construction, Incorporated, Houston, Tex.

Filed Dec. 6, 1968, Ser. No. 781,845
Int. Cl. F25j *3/02, 3/06*
U.S. Cl. 62—26 **2 Claims**



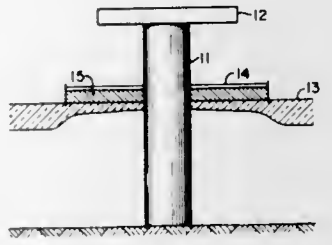

COLD GAS EXCHANGER
DEMETHANIZER REFLUX CONDENSER
DEMETHANIZER
DEMETHANIZER SIDE REBOILER
DEMETHANIZER REFLUX SEPARATOR
REBOILER
PRODUCT
EXPANDER SUCTION SCRUBBER
DEMETHANIZER REFLUX PUMP

A low temperature method is provided for removing condensable components from an inlet hydrocarbon gas, such as natural gas having a high proportion of methane. The system includes a fractionating column to remove condensed components and a novel reflux step which is arranged to condense additional condensable components from the gas after passing the gas through the fractionating column and to return the additional condensed components back to the fractionating column as reflux. The system utilizes expansion means in the form of a gas turbine which is connected such that the energy generated by the turbine is used to operate a compressor to recompress the gas after removal of certain of the condensable components therefrom.

3,702,542
ICE CONTROL ABOUT MARINE STRUCTURES

Russell A. Hemstock, Calgary, Canada, assignor to Esso Production Research Company

Filed March 3, 1971, Ser. No. 120,565
Int. Cl. F25c *1/02;* **E02d** *5/22*
U.S. Cl. 62—66 **12 Claims**

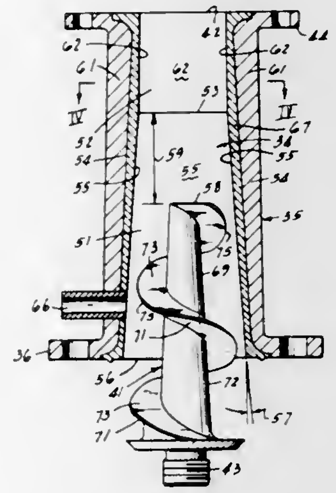


Ice is controlled about a marine structure after a continuous ice cover has been formed by applying a layer of solid insulating material sufficiently thick to balance heat float when the ice reaches the desired thickness to the surface of the ice.

3,702,543
ICE MAKING APPARATUS

John B. Lyman, Bloomington, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed May 22, 1970, Ser. No. 39,775
Int. Cl. F25c *1/14*
U.S. Cl. 62—354 **5 Claims**



A rotatable compression auger and nozzle assembly includes helical flights disposed within a bore having a non-circular cross section and lined with a liner having a low thermal conductivity. An optimum angulation of the helical flights insures that an ice slush product neat the auger bonds to ice particles in free portions of the bore, and the axial alignment of the auger relative to the configuration of walls of the bore is predetermined to give either hard or uncompressed ice.

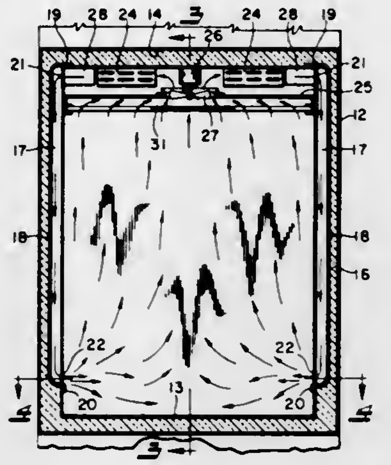
3,702,544
REFRIGERATOR

George Grinups, Penndel, Pa., assignor to Unitec Industries, Inc., York, Pa.

Filed Sept. 25, 1970, Ser. No. 75,334
Int. Cl. F25d *17/06*
U.S. Cl. 62—414 **5 Claims**

Cooled air is circulated upwardly through an insulated liner forming the food chamber by a top fan, evaporator coils at the respective sides of the fan, and conduit means extending from the coils and including ducts which extend exteriorly at the sides of the liner from the top portion to the bottom portion of the same. The cooled air streams from such ducts are

discharged into the liner at horizontal shielded openings in the respective sides at relatively small spacing above the liner bottom. The liner and a surrounding spaced outer shell are single molded plastic shapes, with insulation therebetween foamed in place and about the ducts.



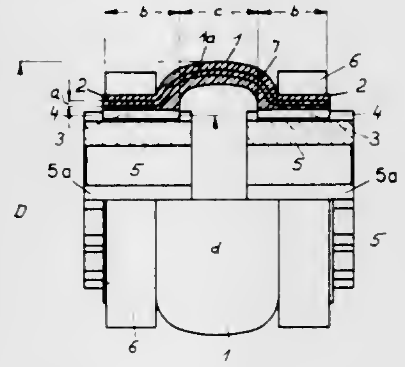
3,702,545
SHAFT COUPLING HAVING RESILIENT TORQUE-TRANSMITTING MEMBER

Karl Schlotmann; Heinz-Dieter Bohm, both of Unna, and Werner Ruggen, Holzwickede, all of Germany, assignors to Maschinenfabrik Stromag G.m.b.H., Unna, Germany

Filed June 5, 1970, Ser. No. 43,700

Claims priority, application Germany, June 11, 1969, P 19 29 623.2

Int. Cl. F16d *3/19*
U.S. Cl. 64—11 R **4 Claims**

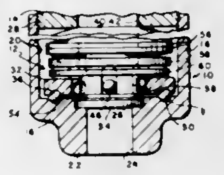


A flexible coupling including a resilient torque-transmitting member having an axially inner portion substantially in the shape of a tire of a car and having lateral sleeve portions projection axially outwardly from the axially inner car-tire-shaped portion is provided with equidistant reinforcement inserts separated from each other by a layer of an elastomer.

3,702,546
TORQUE LIMITING ADAPTER

Lawrence S. Schnepel, Sudbury, Mass., assignor to The X-4 Corporation, West Acton, Mass.

Filed Aug. 17, 1970, Ser. No. 64,409
Int. Cl. F16d *7/06*
U.S. Cl. 64—29 **4 Claims**



A torque release adapter in which the torque at which release is effected is controlled by variable spring pressure applied axially with respect to the rotational force applying the torque; characterized in that the adjusted torque at which release takes place is unaffected by the application of axial force to the device applied in conjunction with the rotational force.

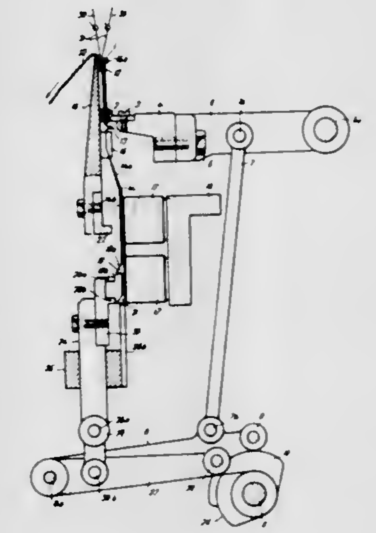
3,702,547
APPARATUS FOR CONTROLLING WARP KNITTING LATCH NEEDLES

Ervin Peschl, Ceska U Brna, Czechoslovakia, assignor to Yvzkumny Ustav Pletarsky, Brno, Czechoslovakia

Filed June 23, 1971, Ser. No. 155,887

Claims priority, application Czechoslovakia, June 26, 1970, 4478/70

Int. Cl. D04b *23/00, 25/00, 27/00*
U.S. Cl. 66—86 **10 Claims**

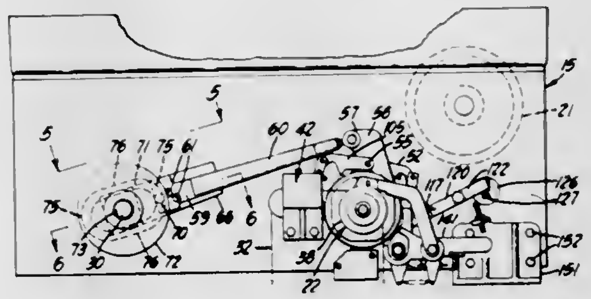


Warp knitting operations of latch needles are controlled in accordance with a program representing a pattern by electromagnets acting on resilient armature portions of the latches so that coupling portions only of selected latches are placed in the path of reciprocating control means for being raised to cooperate with raised hooks of the latch needles. The present invention is concerned with a warp knitting or like machine. The machine is in some respects similar to a standard Raschel machine, but is provided with latch needles including a tubular hook part, and a latch part slidable in the tubular hook part.

3,702,548
PATTERN MECHANISM FOR KNITTING MACHINES

Rutledge G. Hegemen, Lorane, and James D. Moyer, Wyomissing, both of Pa., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Nov. 5, 1970, Ser. No. 87,063
Int. Cl. D04b *15/00*
U.S. Cl. 66—154 R **1 Claim**

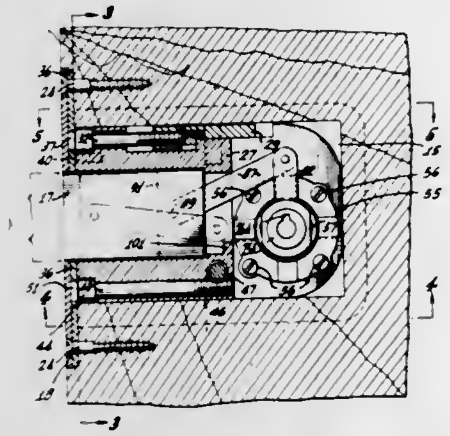


Pattern mechanism for controlling the operation of a circular knitting machine during stocking forming cycles thereof the pattern mechanism including an endless pattern member, means for continuously advancing the pattern member through a complete selecting cycle during each stocking forming cycle and means for controlling the advancing means to at times cause advance of the pattern member in steps of a first extent during its selecting cycle and at other times to cause advance of the pattern member in steps of the first extent and steps of a second extent during its selecting cycle. The advancing means for the pattern member and the controlling means are operated by common means and the controlling means is adapted to be activated and inactivated during a controlling cycle by means in part controlled by the controlling means and in part controlled by a second pattern member of the machine.

3,702,549
HIGH SECURITY DOOR LOCK

George B. Solovieff; Paul G. Solovieff, both of 1815 S. El Camino Real, San Clemente, Calif., and Stephen W. Solovieff, 14042 Woodlawn Ave., Tustin, Calif.

Filed Oct. 22, 1970, Ser. No. 83,095
Int. Cl. E05b *9/06, 27/06*
U.S. Cl. 70—134 **23 Claims**



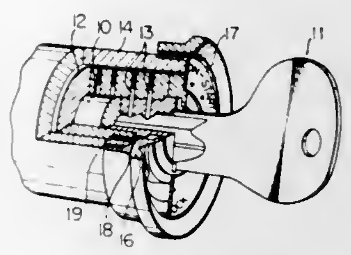
A high security-unit-type, door lock having opposite side escutcheon plates which are drawn tightly against the opposite faces of the door by means accessible only from the edge of the door, so that the escutcheon plates cannot be removed when the door is closed. The lock cylinder and plug have longitudinally-spaced, radially-extending, tumbler pins therein, spring biased toward the center of the lock, the plug being formed of body end sections which are relatively rotatable for assembly at 90° incremental positions. The end plugs determine the rotational position in which the key enters the lock whereby four lock combinations are provided for by relative rotation between the ends and body of the plug without changing the lengths of the tumbler pins. The lock plug directly drives bolt-extending means over-center as the plug rotates 90° to prevent the bolt being pushed back into the lock from the exterior thereof. In the 90°, bolt-extended position of the plug, the key may be withdrawn from the lock without rotating the plug back to its original key-insert position. The key may enter the lock from either side, using the same cylinder and tumbler pins, and the key is of cylindrical shape having straight through transverse notches milled in its outer surface spaced 90° about the circumference of the key and spaced longitudinally thereof in accordance with the tumbler pin spacing.

3,702,550
STEERING LOCK DEVICE

Yasushi Shimizu, Ohmiya, Japan, assignor to Nissan Motor Company, Limited, Yokohama City and Kanto Seiki Company, Limited, Ohmiya City, Japan

Filed May 5, 1971, Ser. No. 140,469
Claims priority, application Japan, May 12, 1970, 45/40396
Int. Cl. B60r *25/02;* **E05b** *11/00*
U.S. Cl. 70—252 **8 Claims**

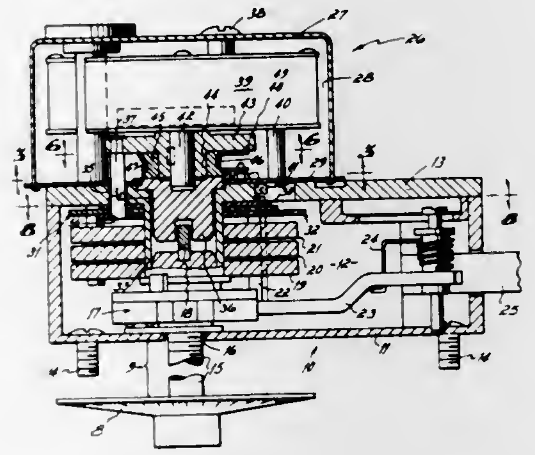
A combination ignition control and steering lock device for motor vehicles adapted to lock a steering column in two mutually independent steps. To lock the steering column, an ignition key is first rotated to the lock position and then a retaining means which has been in engagement with the key is rotated to a position in which the key can be disengaged therefrom and withdrawn from key cylinder. An accidental or erroneous locking of the steering column during operation of the motor vehicle is avoided in this manner.



3,702,551
TIME DELAY COMBINATION LOCKS

Horace A. Blizard, Milford, Ohio, assignor to The Mosler Safe Company, Hamilton, Ohio

Filed Feb. 19, 1971, Ser. No. 116,967
Int. Cl. E05b *43/00*
U.S. Cl. 70—269 **5 Claims**

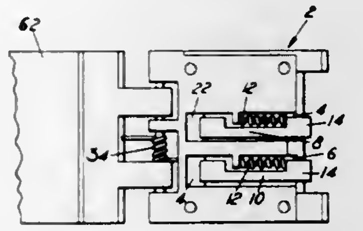


The disclosure is of a time delay combination lock of simplified construction in which all parts, except the bolt and the lever through which the bolt is actuated, are aligned and mounted for rotative movement about an axis common to the axis of the knobbed dial by which the combination is set.

3,702,552
LOCKS

Ian B. Albery, 12 Earlham Street, London, England

Division of Ser. No. 770,618, Oct. 25, 1968, Pat. No. 3,564,877. This application Nov. 17, 1970, Ser. No. 90,417
Claims priority, application Great Britain, Sept. 11, 1968, 43,238/68; Sept. 11, 1968, 43/239/68
Int. Cl. E05b *15/01, 63/22*
U.S. Cl. 70—346 **2 Claims**

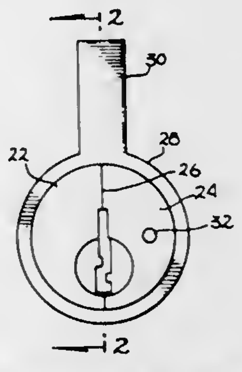


The umbrella lock has a pair of jaws defining an open ended slot, the jaws being spaced apart by a distance such that a portion of an umbrella above the full folded thickness of the umbrella of a gentleman's standard umbrella can pass therebetween, but the full folded thickness is prevented from so passing through. The open end of the slot is closed by a flap or the like which is pivoted to the edge of one jaw and engages the other jaw. A lock is provided to lock the flap to the said other jaw. The lock may comprise a body having a slot for receiving a suitable key. A tongue is slidably mounted in the body and biased to an external position wherein a portion of the tongue projects from the body. The tongue has a projecting pin which extends into the path of the key in the slot, so that when the key is inserted into the slot, it engages the pin, and so that further depression of the key into the slot causes movement of the pin and thus causes retraction of the tongue from its extended position.

3,702,553
CYLINDER LOCK PLUG

Roger J. Nolin, Monterey Park, Calif., assignor to Tool Research & Engineering Corporation, Beverly Hills, Calif.

Filed May 10, 1971, Ser. No. 141,875
Int. Cl. E05b *9/04, 15/08*
U.S. Cl. 70—375 **16 Claims**

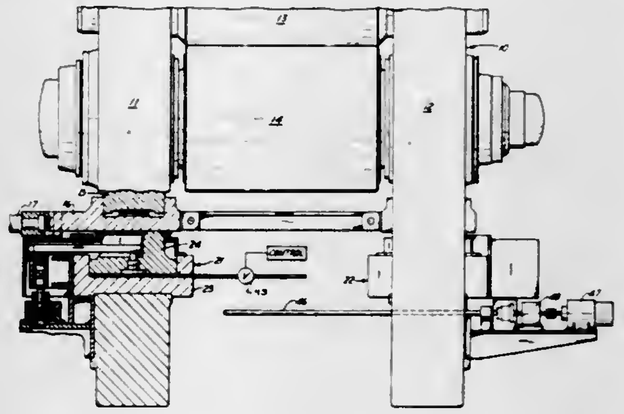


A cylinder lock plug comprising two plug sections adapted to mate on facing surfaces defining a keyway, with the periphery of the sections adapted to slide into a cylindrical plug sleeve containing pin tumbler holes to complete the plug. Each plug section has an enlarged shoulder area adjacent one end and a threaded section adjacent the other end. When the plug is assembled with the cylindrical member into a cylinder, the enlarged shoulder areas mate to form the front face of the plug, and the threaded sections cooperate to define a threaded surface to receive a threaded retaining member. Each plug section defines the shape of one side of the keyway, so that plugs with a great variety of keyways may be made by using different combinations of a few plug sections.

3,702,554
ROLL POSITIONING MEANS FOR A ROLLING MILL

Charles Storer Shumaker, Glenshaw, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Aug. 13, 1971, Ser. No. 171,653
Claims priority, application Great Britain, Sept. 18, 1970, 44576/70
Int. Cl. B21b *37/08*
U.S. Cl. 72—21 **10 Claims**

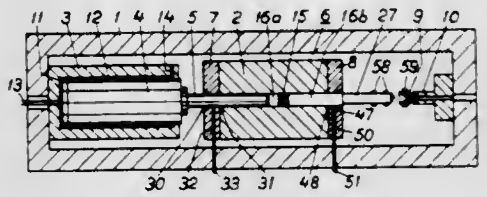


The disclosure of this application relates to a rolling mill which includes a bar spring and a load cell as part of its gauge control mechanism. Associated with the spring and cell is a jack that adjusts the position of the spring to its optimum working position when the spring would otherwise be moved out of such a position on the insertion into the mill of different sized rolls.

3,702,555
PRESS FOR HOT HYDROSTATIC EXTRUSION

Hans Larker, and Jan Nilsson, both of Robertsfors, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Feb. 25, 1971, Ser. No. 118,682
Int. Cl. B21c *23/08*
U.S. Cl. 72—60 **10 Claims**



For hydrostatic extrusion, a press is provided having a yoke. One of the end pieces of the yoke carries a die receiving block having an extrusion passage therethrough. A pressure cylinder is mounted within the yoke for movement towards and from the die receiving block. Slidable in the cylinder of the high pressure cylinder is a billet holder which divides the space within the cylinder into two parts. The billet holder has a spring controlled valve which prevents passage of pressure fluid therethrough until a predetermined pressure differential exists between the chambers. A punch is provided for sliding into and out of the high pressure cylinder on the opposite side thereof from the die.

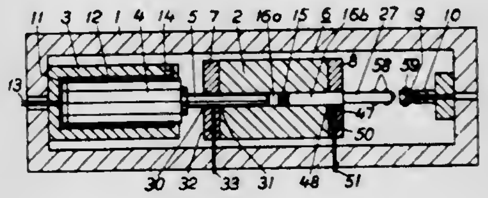
The die and billet are first positioned between the high pressure cylinder and the die receiving block, after which the high pressure cylinder is moved to enclose the billet. Then pressure is applied in the high pressure cylinder on the side of the punch to move the billet holder against the billet and move the billet into engagement with the die. Then the pressure behind the the billet holder is increased so that the fluid passes through the billet holder and thereafter further increased by advancing the punch into the high pressure cylinder so that the fluid exerts sufficient pressure on the billet to extrude it.

Before opening the high pressure cylinder, the punch is withdrawn and cool pressure fluid is admitted into the end of the cylinder remote from the punch.

3,702,556
METHOD OF HYDROSTATIC EXTRUSION

Hans Larker, and Jan Nilsson, both of Robertsfors, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Feb. 25, 1971, Ser. No. 118,684
Claims priority, application Sweden, April 30, 1970, 6011/70
Int. Cl. B21c *23/08*
U.S. Cl. 72—60 **6 Claims**



For hydrostatic extrusion, a press is provided having a yoke. One of the end pieces of the yoke carries a die receiving block having an extrusion passage therethrough. A pressure cylinder is mounted within the yoke for movement towards and from the die receiving block. Slidable in the cylinder of the high pressure cylinder is a billet holder which divides the space within the cylinder into two parts. The billet holder has a spring controlled valve which prevents passage of pressure fluid therethrough until a predetermined pressure differential exists between the chambers. A punch is provided for sliding into and out of the high pressure cylinder on the opposite side thereof from the die.

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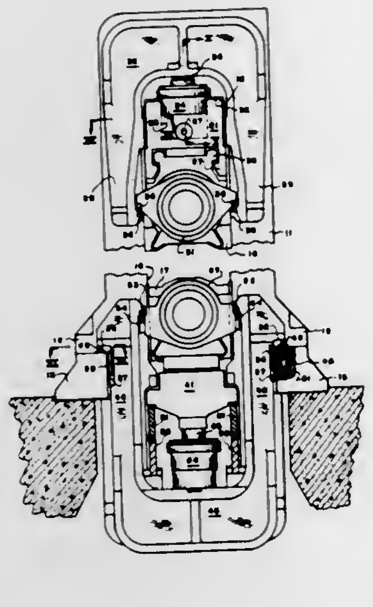
Before opening the high pressure cylinder, the punch is withdrawn and cool pressure fluid is admitted into the end of the cylinder remote from the punch.

3,702,557
APPARATUS FOR SUPPORTING YOKES FOR A ROLLING MILL HAVING ROLL CONTOUR CONTROL

William P. Amend, Coraopolis, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed March 1, 1971, Ser. No. 120,034
Int. Cl. B21b *31/08*
U.S. Cl. 72—238 **11 Claims**

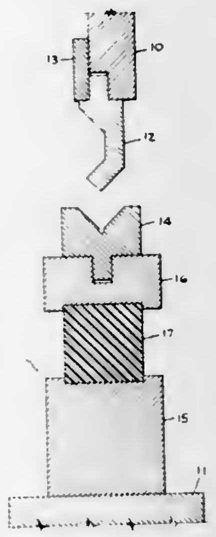


This disclosure relates to an improved 4-high rolling mill construction which is particularly useful to facilitate backup roll changing. The rolling mill includes piston and cylinder assemblies employed to develop a roll bending force which is transmitted by yokes to outboard bearing chocks mounted on the backup rolls. A beam is provided between each backup roll and the top and bottom of the housings for absorbing the reaction force to the roll bending force. The yokes for the upper backup roll are guided and horizontally supported by the beam. The yokes for the bottom backup roll are guided and horizontally supported by the housing bed plates which further include piston and cylinder assemblies for vertically supporting these yokes during replacement of the bottom backup roll.

3,702,558
DEFLECTION COMPENSATING PRESS BRAKE DIE SUPPORT

Donald G. Swenson, Eggertsville, and George H. Trautman, Jr., Kenmore, both of N.Y., assignors to Niagara Machine & Tool Works, Buffalo, N.Y.

Filed Sept. 9, 1971, Ser. No. 178,892
Int. Cl. B21d *7/06*
U.S. Cl. 72—389 **16 Claims**

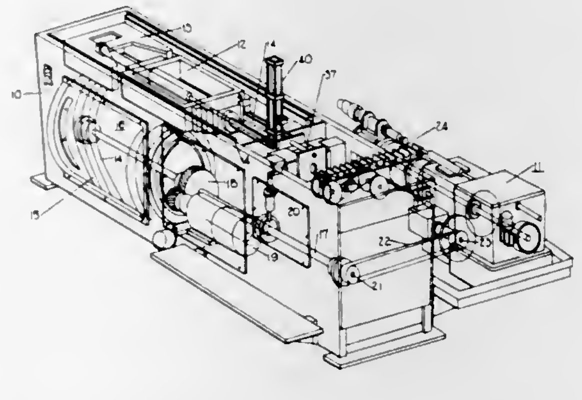


Apparatus for eliminating faulty bends in press brakes due to deflection between the ram and bed of a press brake which is greatest at the mid point. A compressible polyurethane member is interposed between the die and bed of the press brake and is of such thickness that it compresses to a degree approximately one order of magnitude greater than the total deflection of the bed and ram at the mid point. The polyurethane member is of substantially the same length and in registry with the bend line of the workpiece. Means are also provided for readily lifting the die member to provide polyurethane inserts of a total length to match the bend line of the workpiece.

3,702,559
CAN BODY MAKING MACHINE

Richard J. Hasselbeck, Houston, and Elton G. Kaminski, Sidney, both of Ohio, assignors to The Stolle Corporation, Sidney, Ohio

Filed Jan. 11, 1971, Ser. No. 105,307
Int. Cl. B21d *45/00*
U.S. Cl. 72—345 **5 Claims**



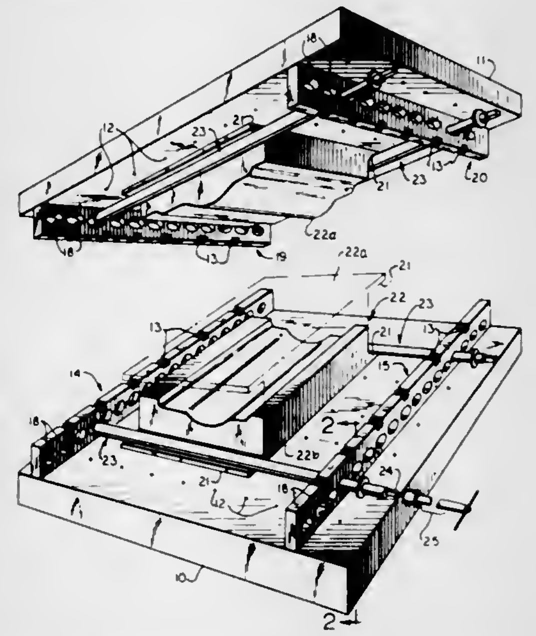
A can body making machine wherein a previously formed cup is wall-ironed and domed and then trimmed. The wall-ironing punch is actuated by an electric motor which drives a barrel cam. The primary ram, carrying the ironing punch is moved by a follower cooperating with a first track in the barrel cam. The secondary ram carrying a stripper punch is actuated by a follower cooperating with a second track in the barrel cam. The stripper punch telescopes within the ironing punch.

The cam tracks are configured for a dwell of both punches at their fully retracted position to permit loading, and then to provide a constant speed movement of the two punches as a unit to engage a preformed cup and force it through wall-ironing tool pack and into a doming die. Upon completion of the doming operation the first track serves to quickly retract the ironing punch, while the second track holds the stripper punch stationary, to strip the formed can from the ironing punch, and thereafter returns the stripper punch quickly to its starting position. An indexing pocket conveyor transports the formed cans individually to a trimmer. A gravity chute feeds the preformed cups to the wall-ironing punch, and means are provided to re-round the cups for entry thereinto of the ironing punch.

3,702,560
QUICK REPLACEMENT MECHANISM FOR MOUNTING DIES IN PRESS

Joseph C. Weidel, Bonita, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed May 5, 1971, Ser. No. 140,535
Int. Cl. B21d *37/04*; **F16l** *15/00*
U.S. Cl. 72—481 **4 Claims**



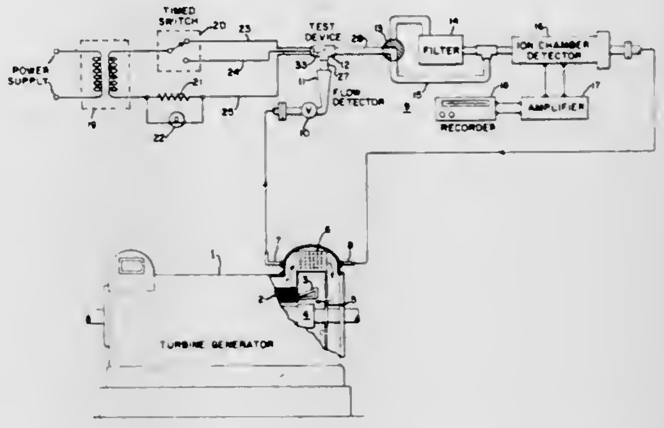
For mounting a die set in a press, with the press open a pair of apertured anchor bars are secured in parallel, spaced relation to the press platen, and a pair of similar bars are secured to the press ram. A die set, consisting of at least an upper die and a lower die, is placed on the platen between the anchor bars, each die of the set having a flange extending from each end thereof. A pair of hold-down rods, each having round end portions and an eccentric intermediate portion, are inserted through axially opposite pairs of holes in the anchor bars, one over each end flange of the lower die. The hold-down rods are rotated so that their eccentric, intermediate portions bear on the die flanges and thus clamp the die into securely locked position on the press platen. The press is then shut, and the upper die is similarly secured to the ram. Thereafter the press is operated in a usual manner until it is time to remove the dies, when the foregoing procedure is reversed.

3,702,561
SYSTEM FOR CHECKING THE PERFORMANCE OF A DYNAMOELECTRIC MACHINE OVER-HEATING DETECTOR

Chester C. Carson, Ballston Spa; Federico S. Echeverria, Schenectady, and Sterling C. Barton, Scotia, all of N.Y., assignors to General Electric Company

Filed Aug. 31, 1971, Ser. No. 176,552
Int. Cl. G01k *15/00*
U.S. Cl. 73—1 F **3 Claims**

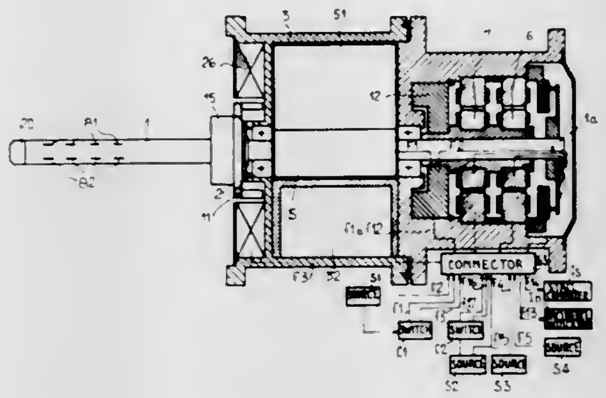
In a system for detecting overheating in a generator by sensing the presence of sub-micron decomposition particles present in the generator cooling gas, a test device is included in the detector flow path for selectively introducing sub-micron particles to check the performance of the detector and the effectiveness of the filter. The test device includes a filament coated with polymeric material and a timed switch for passing a current through the filament to heat it.



3,702,562
FLUID STREAM DIRECTION INDICATOR

Claude Brenot, and Gaston Mollard, both of Paris, France, assignors to Thomson-CSF

Filed Sept. 14, 1971, Ser. No. 180,285
Claims priority, application France, Sept. 23, 1970, 7034416
Int. Cl. G01c *25/00*
U.S. Cl. 73—1 E **6 Claims**



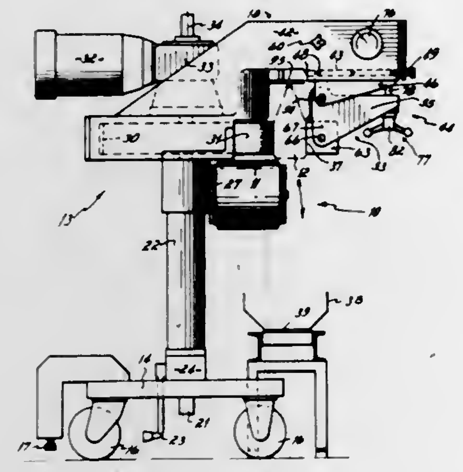
A pneumatic probe assembly comprises an elongated probe which rotates, under infuence of pneumatic forces impressed on spaced areas of its surface, to a position of equilibrium. The angular position of the probe relative to the body of the instrument represents the measured angle of the fluid stream ; the assembly further comprises a plug-in heating arrangement, leafspring type electrical coupling, and a test motor for rotating the probe in the absence of fluid stream, thereby checking the angular indication supplied.

3,702,563
ON-LINE SIMULATED IMPACT TESTER FOR GLASS CONTAINERS

Dale J. Brady, and George W. Gerken, both of Lancaster, Ohio, assignors to Anchor Hocking Corporation, Lancaster, Ohio

Filed Jan. 22, 1971, Ser. No. 108,786
Int. Cl. G01n *3/10*
U.S. Cl. 73—12 **13 Claims**

An on-line squeeze tester for glass containers, having a fast cycle or response time. A force applying shoe is carried by a pivoted lever or bell crank. A pneumatic cushion acts on an arm of the bell crank to bias the shoe toward a drive wheel which rolls a single container across the shoe as squeezing force is applied to the container. The test head is cantilevered from an adjustable support stand.



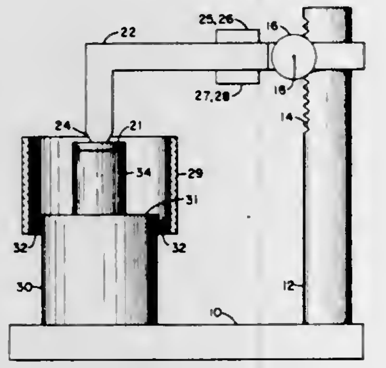
3,702,564
METHOD FOR DETERMINING AQUEOUS ACTIVITY OF SUBSURFACE FORMATIONS

Martin E. Chenevert, Houston, Tex., assignor to Esso Production Research Company

Division of Ser. No. 726,693, May 6, 1968, which is a continuation-in-part of Ser. Nos. 675,490, Oct. 16, 1967, abandoned, and Ser. No. 699,255, Jan. 19, 1968, abandoned. This application May 4, 1970, Ser. No. 34,222

Int. Cl. G01n *19/10, 33/24;* **E21b** *49/02*

U.S. Cl. 73—73 **11 Claims**



Shaley earth formations are drilled or otherwise treated with reduced difficulty through the use of water-in-oil invert emulsion fluids wherein the aqueous phases of the emulsions possess particular water vapor pressures relative to the formations which they contact. The aqueous vapor pressure of an oil-base fluid containing dispersed water is controlled to prevent damage to water-sensitive shale formations by monitoring the vapor pressure of the aqueous phase of the fluid and maintaining a vapor pressure depressant in the aqueous phase in a concentration sufficient to substantially prevent the migration of water from the fluid to the formations. The aqueous vapor pressure of an earth formation is determined. A method and apparatus are disclosed for determining the compatibility of a well fluid with a water-sensitive subsurface formation wherein a substantially unaltered sample of the formation is immersed in the fluid and the direction and extent of water migration between the well fluid and the sample are logged. Improved water-in-oil invert emulsion fluid compositions for drilling and other oil field uses are obtained wherein the aqueous phases of the emulsions possess particular water vapor pressures relative to the formations which they contact.

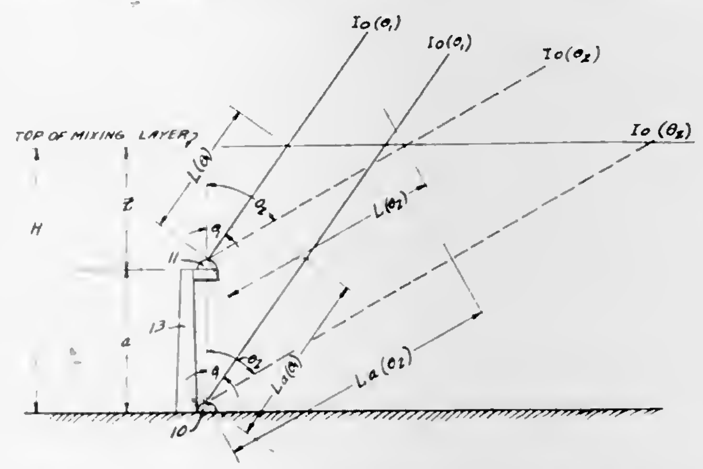
3,702,565
METHOD FOR MEASURING THE HEIGHT OF ATMOSPHERIC AEROSOL AIR

Harry Moses, Park Forest; Delbert N. Eggenberger, Downers Grove; Steven L. Halverson, Chicago Heights, and William W. Managan, Wheaton, all of Ill., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Sept. 21, 1970, Ser. No. 74,039

Int. Cl. G01w *1/00*

U.S. Cl. 73—170 R **9 Claims**



A method of measuring the depth of the aerosol-contaminated layers of air (aerosol layer) is presented. Measurements are made of solar radiation at vertically displaced positions and the height of the aerosol layer calculated from the measurements. The measurements can be made by two displaced instruments at two zenith distances, by two pairs of vertically displaced instruments with one instrument of each pair receiving radiation of a first wave length and the other instrument of each pair receiving radiation of a second wave length or by two vertically displaced instruments with a third instrument positioned centrally therebetween. The height of aerosol layers separated by clear layers is also determined.

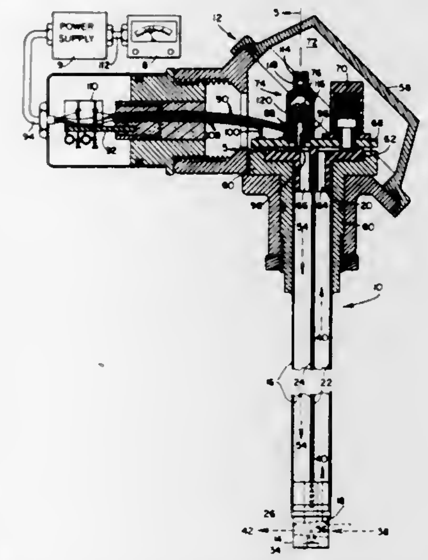
3,702,566
HIGH AIR VELOCITY MEASURING SYSTEM HAVING THERMOTRANSDUCER

Alfred A. Obermaier, Barrington, and Martin J. Pierman, Mount Prospect, both of Ill., assignors to Alnor Instrument Company, Div. of Illinois Testing Laboratories, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 78,563, Oct. 6, 1970, which is a division of Ser. No. 687,084, Nov. 13, 1967, abandoned. This application Oct. 16, 1970, Ser. No. 81,371

Int. Cl. G01f *1/00;* **G01p** *5/10*

U.S. Cl. 73—204 **38 Claims**



The air flow is received into an air shunting probe having a pressure output, which is matched to the pressure output of a pitot tube and accurately tracks a pitot standard, by means of a specially designed high velocity "pitot probe" tip having a tapered passageway, a transverse gate, and a variable baffle therein. The thus received air flow is channeled through at least one and preferably two in-line valves, which limit the maximum air flow therethrough to a small fraction of that received by the probe. When two valves are employed they are piggyback mounted and the "rider" valve can be interchanged easily to thus change the range of operation of the system without need for any other changes, adjustments, or rescaling of an output recorder that is responsive to a thermocouple precisely positioned at the output side of the in-line valves. In this manner the voltage-air velocity curve traced by the output of the thermocouple is the same for all ranges of the system. A cantilever arrangement supports the hot junction of the thermocouple in such manner that it is immobile, despite changes in ambient temperature, the hot wire, air velocity and temperature at the hot junction, and thereby the hot junction remains in the same precise position with reference to air flow thereover.

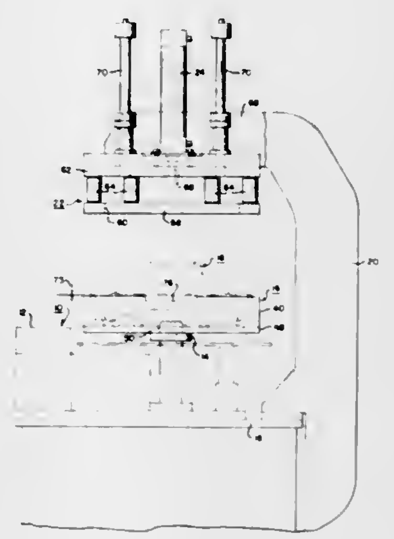
3,702,567
WHEEL COVER BALANCING APPARATUS AND METHOD

Claude J. Marshall, Ann Arbor, Mich., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Feb. 25, 1971, Ser. No. 118,601

Int. Cl. G01m *1/04*

U.S. Cl. 73—487 **16 Claims**



Apparatus for use with a static balancing machine for determining the static balance condition of an automotive wheel cover having spring fingers radially spaced about the rim of the wheel cover. The apparatus comprises a fixture having a recess adapted to receive the wheel cover, a lead-in chamfer configuration adjacent the recess and serving to align the wheel cover with the recess and a power ram registering with the fixture for forcing the spring fingers of a wheel cover placed on the chamfer into a pressure engaging state with the recess wall.

Use of the apparatus described above mounted to the spindle of a static balancing machine allows an improved method of balancing the wheel cover. This method includes aligning the wheel cover axis with respect to the vertical axis of the spindle so that the axes coincide by forcing the spring fingers simultaneously and uniformly into a pressure engaging state within a recess of said fixture. Any out of balance condition indicated by the balancing machine then may be corrected and the wheel cover placed in a balanced state.

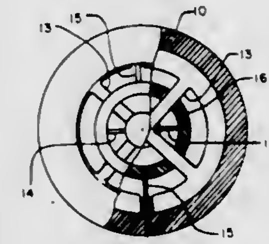
3,702,568
GYROSCOPES AND SUSPENSIONS THEREFOR

Edwin W. Howe, 1150 McDonald Place, North Baldwin, N.Y.

Filed July 10, 1970, Ser. No. 53,963

Int. Cl. G01c *19/02*

U.S. Cl. 74—5 **14 Claims**



A sensitive element support for gyroscopic apparatus including an outer wheel connected to a drive shaft by flat transversely stiff elastic spokes having an effective plans parallel to the wheel, and an intermediate gimbal ring connected to the wheel by diametrically opposite flat, transversely stiff, torsional members having their flat plane normally perpendicular to the plane of the wheel, and connected to the shaft by similar members spaced 90° away from the first torsinal members. Construction is simplified by making all connecting members in a single operation out of a flat sheet so as to leave the spokes and the other flat torsinal members between appropriate portions on which the outer wheel, gimbal ring and driving coupling will be attached. The torsinal members are then twisted to their final configurations, i.e., perpendicular to the sheet from which they were cut, and the flat sheet is sandwiched between two halves of the outer wheel, gimbal ring and hub portion. The completed assembly resembles a "cartridge" which, by its nature, has definite advantages in the initial fabrication and maintenance of the gyroscopic instruments using the "cartridge" to support the gyroscopic rotor.

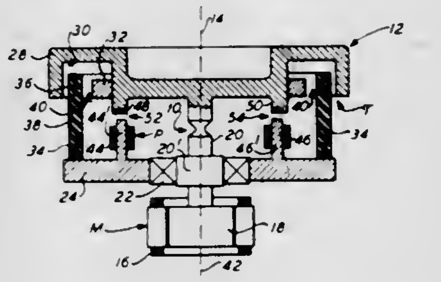
3,702,569
SYSTEM FOR ELIMINATING GYRO ON-OFF DRIFT EFFECTS

James A. Quinn, Ridgewood; William J. Owen, Netcong, and Garry Terpstra, Pompton Plains, all of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Nov. 19, 1970, Ser. No. 90,920

Int. Cl. G01c *19/48*

U.S. Cl. 74—5.47 **10 Claims**



Solid rotor synchronous motor gyroscope having two-phase square wave supply voltage; control circuitry including logic circuit components for periodically producing a phase shift in the motor excitation voltage that results in slow relative rotation between the electrical field and the solid rotor; gyro drift errors varying sinusoidally in sense and magnitude in accordance with the relative rotation between field and rotor, balance out during each complete cycle of relative rotation.

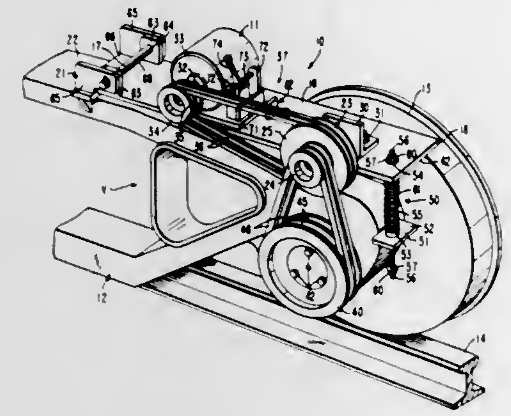
3,702,570
DRIVE FOR VEHICLE MOUNTED ALTERNATOR

Tieme C. Stikkers, Brookline Station, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Oct. 7, 1971, Ser. No. 187,483

Int. Cl. F16h *7/10*

U.S. Cl. 74—242.15 R **20 Claims**



An alternator is adjustably mounted adjacent a hinged end of an elongated hingedly mounted support carried by a vehicle and the alternator has a driven sheave fixed to its rotor. An idler sheave assembly is carried adjacent the opposite end of the elongated support and at least one power transmission belt is operatively connected between the driven sheave and the sheave assembly. A driver sheave is mounted against the end of a rotatable axle of the vehicle for rotation therewith and at least another power transmission belt is operatively connected between the driver sheave and the sheave assembly. A spring assembly yieldingly urges the support about its hinged end thereby moving the sheave assembly away from the driver sheave and placing constant yielding tension on the other belt thereby assuring that the alternator is driven in an optimum manner by the driver sheave.

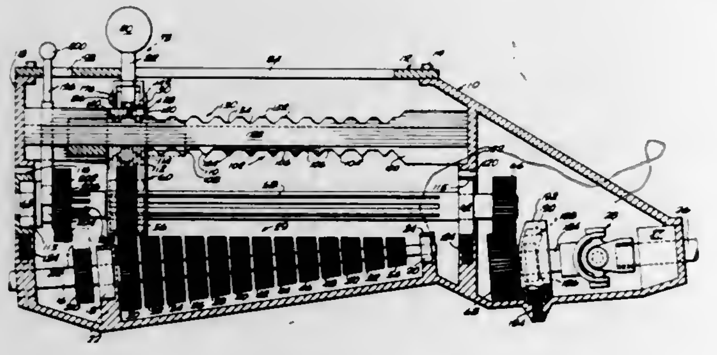
3,702,571
VARIABLE SPEED TRANSMISSION

Jorge R. Sainz, 1373 S.W. 21st Terrace, Miami, Fla.

Filed Sept. 17, 1971, Ser. No. 181,362

Int. Cl. F16h *3/22*

U.S. Cl. 74—341 **26 Claims**



A gear box providing a continuous flow of power, through a plurality of different gear ratios, from a driving shaft to a driven shaft, a primary drive means being employed to transmit the power through any one of the gear ratios and a secondary drive means being provided to transmit the power from the driving shaft to the driven shaft during the shifting operation from one gear ratio to another, manual control means being provided to disengage the primary drive means during the gear shifting operations and to simultaneously engage the secondary drive means until the primary drive means is reengaged at a different gear ratio.

3,702,572
AUTOMATIC TRANSMISSION CONTROL SYSTEM FOR AUTOMOBILE

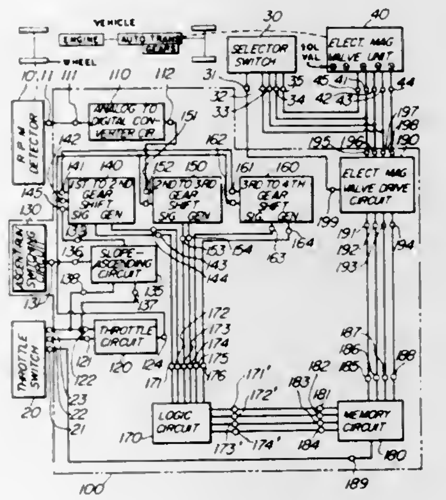
Hisato Wakamatsu, Kariya; Akira Kitano, Nagoya, and Hisasi Kawai, Toyohashi, all of Japan, assignors to Nippondenso Kabushiki Kaisha, Aichi-ken, Japan

Continuation-in-part of Ser. No. 34,098, May 4, 1970, and a continuation-in-part of Ser. No. 35,327, May 7, 1970, Pat. No. 3,662,625. This application July 10, 1970, Ser. No. 53,909

Claims priority, application Japan, July 14, 1969, 44/55960; July 17, 1969, 44/56566

Int. Cl. B60k *21/00;* **F16h** *5/42*

U.S. Cl. 74—866 **3 Claims**



An automatic transmission control system for automobiles by detecting a vehicle speed and a load or throttle opening of a vehicle, is provided with a device for the ordinary driving on a flat road, a slope-ascending circuit for improved speed change operation in climbing up a slope and an ascent-run switching circuit for switching from a flat-road run to an ascent run.

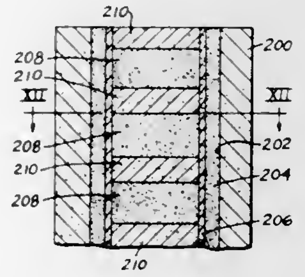
3,702,573
CERMET PRODUCT AND METHOD AND APPARATUS FOR THE MANUFACTURE THEREOF

Bela J. Nemeth, Greensburg, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed March 19, 1969, Ser. No. 808,590

Int. Cl. B21k *21/00*

U.S. Cl. 76—101 A **1 Claim**



The invention relates to a cermet product and a method and apparatus for the manufacture thereof in which carbonaceous material is placed in a cell in the presence of metal and converted to diamond form. The converted charge upon removal from the apparatus is shaped and mounted on a tool holder and it is then adapted for use as a turning tool. The invention contemplates conversion of the carbon-metal charge in a shaped cavity to reduce the amount of shaping required after the charge is removed from the chamber in which it is converted.

3,702,574
CONTROL ARRANGEMENTS FOR AN AUTOMATIC MACHINE TOOL

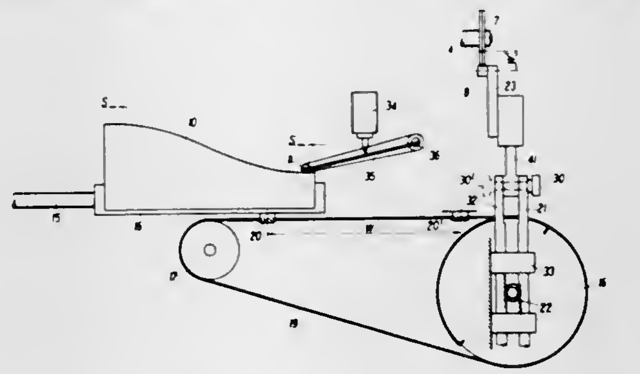
Alfred Schmermund, 62, Kornerstrasse, 5820, Gevelsberg, Germany

Filed Oct. 8, 1970, Ser. No. 79,100

Claims priority, application Great Britain, Oct. 23, 1969, 52,037/69

Int. Cl. B23c *1/16*

U.S. Cl. 90—13 B **4 Claims**



This invention relates to a control arrangement for an automatic machine tool wherein a master cam is mounted on a movable carrier. The shape of the master cam is sensed by a main follower which controls a milling tool operating in a rotating workpiece. An auxiliary cam is rotated with the workpiece and an auxiliary follower co-operates with the auxiliary cam. The auxiliary follower is coupled to the carrier and the coupling is selectably operable to cause displacement of the master cam in either one of two mutually opposite directions in response to displacement of the auxiliary follower in a predetermined direction. The profile of the master cam has two linear portions at respectively opposite ends of its profile and each linear portion is parallel to the direction of displacement of the carrier, whereby the displacement of the master cam when the main follower is in contact with either one of the linear end portions does not result in displacement of the master follower.

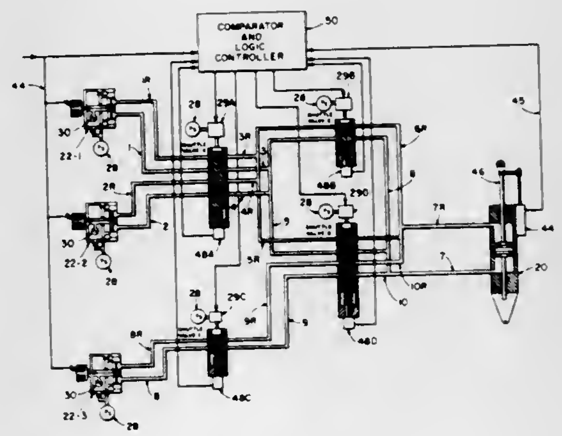
3,702,575
REDUNDANT HYDRAULIC CONTROL SYSTEM FOR ACTUATORS

Richard A. Campbell, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed June 1, 1971, Ser. No. 148,756

Int. Cl. F15b *9/03, 9/04*

U.S. Cl. 91—363 A **4 Claims**



A unique combination of three main valves to supply hydraulic pressure to a conduit pattern including four secondary valves for the assured operation of a hydraulic actuator. All the secondary valves are under the command of a comparator and logic controller which is capable of stopping the hydraulic flow from a valve that failed and allowing the hydraulic flow to continue with the other operative valves. The control system permits two single point failures and still allows operation with no degradation in performance.

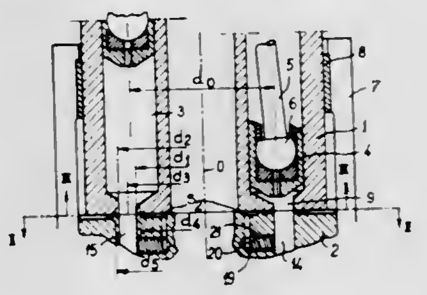
3,702,576
HIGH-PRESSURE MULTI-CYLINDER HYDRAULIC MACHINES

Francois C. Pruvot, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt, France

Filed June 2, 1970, Ser. No. 42,711

Int. Cl. F01b *1/00, 13/04*

U.S. Cl. 91—487 **2 Claims**



High-pressure hydraulic machine of the multi-cylinder barrel type with a distributor plate, said barrel and plate revolving in mutual contact, wherein the barrel cylinders and the orifices through which they open into the interface between said barrel and said distributor plate are disposed on a circle about the axis of rotation of said barrel, together with the corresponding fluid inlet and outlet ports of the distributor plate constituting a hydrodynamic bearing, characterized in that the mean diameter of the imaginary circle containing the centers of said orifices and ports is greater than the diameter of the imaginary cylinder containing the axes of said cylinders, whereby the resultant balancing force exerted by said barrel on said distributor plate is directed internally of the bearing surfaces of said hydrodynamic bearing which are preferably coincident with the barrel axis.

3,702,577
DRIVE SHAFT POSITIONING DEVICE ASSOCIATED WITH FUEL INJECTION PUMPS

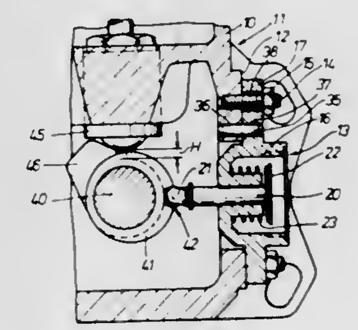
Heinrich Staudt, Markgroningen-Talhausen, and Rolf Prillwitz, Asperg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 11, 1971, Ser. No. 105,537

Claims priority, application Germany, Jan. 10, 1970, P 20 00 997.6

Int. Cl. F15b *15/76*

U.S. Cl. 92—15 **4 Claims**



For determining the fuel starting position of a drive shaft associated with a fuel injection pump, to the pump housing there is affixed a device which includes a locking pin shiftable into a position in which it drops into a notch on the drive shaft when the latter is in its previously determined fuel starting position.

3,702,578

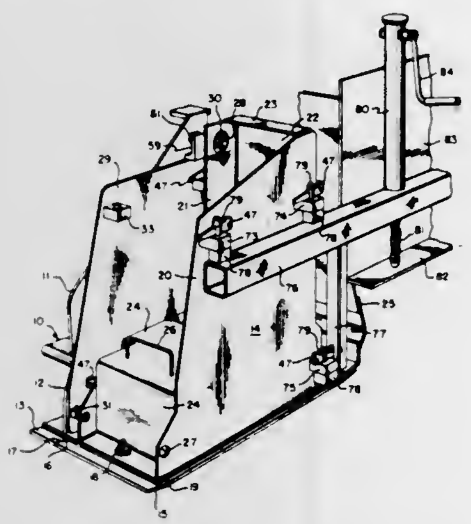
QUICK CHANGE SCREED EXTENSION FOR PAVING MACHINES

Donald R. Davin, Shelbyville, Ill., assignor to Blaw-Knox Construction Equipment, Inc., Mattoon, Ill.

Filed Feb. 17, 1971, Ser. No. 116,202

Int. Cl. E01c *19/22*

U.S. Cl. 94—45 R **8 Claims**



The invention relates to an apparatus adapted to be attached to the screed of a paving machine, to form a lateral extension thereof. The construction of the screed extension particularly takes into account that it customarily will be installed and removed in the field, possibly by unskilled labor. Thus, provisions are made for the installation and removal of the screed extension, utilizing tools and equipment readily available in the field. Since the surfacing plate of the screed extension must align accurately with that of the main screed, an adjustable adapter plate is provided, which may be installed and adjusted in the first instance in the contractor's shop. Thereafter, mounting of the screed extension to the preadjusted adapter plate, is effected by a combination of tapered locating pins and keeper wedges.

3,702,579

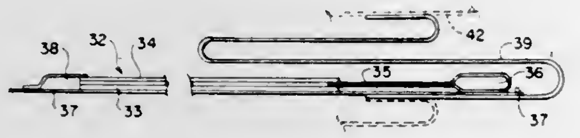
FILM UNITS, PACK AND CAMERA

Hubert Nerwin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 2, 1970, Ser. No. 77,486

Int. Cl. G03c *1/48*

U.S. Cl. 95—13 **8 Claims**



Self-processing photographic film units and a film pack and camera for use therewith. The film units include smaller image-recording units that are exposed and then translated from the pack and expelled from the camera by "dry" leaders. The dry leaders may be collected on a compact roll, or pulled from the pack and camera, for disposal without damage to any sensitive environment such as clothing. Processing fluid containers (pods) and excess fluid collectors (traps) are associated with the recording units on carrier sheets in the pack, but are translated with the carrier sheet by the dry leaders to a pack waste-storage chamber as the recording units are expelled from the camera. Thus, all "wet" processing waste materials, e.g., the carriers, pods and traps, are retained in the pack for disposal after exhaustion of the pack and without damage to any sensitive environment.

3,702,580

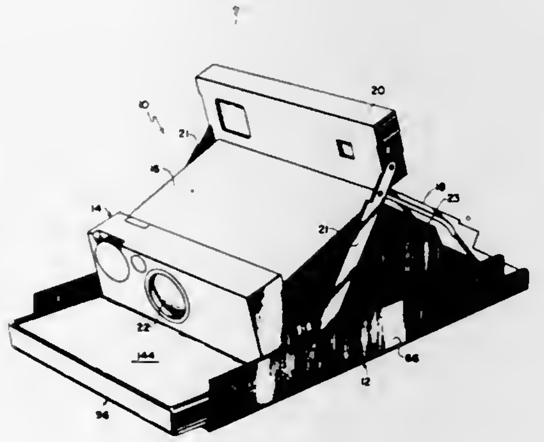
RECIPROCATING DRAWER TYPE PHOTOGRAPHIC APPARATUS AND METHOD

Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 878,638, Nov. 21, 1969, abandoned. This application Nov. 28, 1969, Ser. No. 880,794

Int. Cl. G03b *17/50*

U.S. Cl. 95—13 **54 Claims**



A camera and photographic method performed by the camera adapted to employ a film assemblage including a plurality of self-developing film units enclosed within a container having an exposure aperture in the forward wall thereof. A film unit is exposed within the container, moved, leading end foremost, from the container through one of a pair of slots at one end of the container and between a pair of pressure applying members for distributing a processing liquid within the film unit to form an image therein; and is then returned to the container through the other slot to a position behind the other film units in which the processed film units is oriented in substantially the same way as originally oriented prior to exposure. The camera includes a compact housing for enclosing the film container and pressure applying members and, following exposure, the film unit is moved in opposite directions outwardly from the film container and housing during distribution of the processing liquid by the pressure-applying members in the opposite direction and then past and to the rear of the pressure-applying members into the housing and film container wherein processing of the film unit, i.e., image formation, is continued toward completion. During exposure, subsequent movement during processing and then return movement into the film container, a film unit is maintained in a generally planar configuration. The camera includes an extensible enclosure for the film units during movement thereof; film engagement members within the enclosure for returning the film unit to the film container following completion of its outward motion; and a door at its opposite end which may be opened to remove a processed film assemblage from the film container through a withdrawal opening at the end thereof to permit viewing of a processed film unit. A film unit may be reintroduced into the film container through the withdrawal opening and the door includes a member for properly locating such a film unit within the container so that it does not interfere with introduction of succeeding units into the container.

3,702,581

METHOD AND APPARATUS FOR FORMING IMAGES IN ANODIZED SHEET METAL

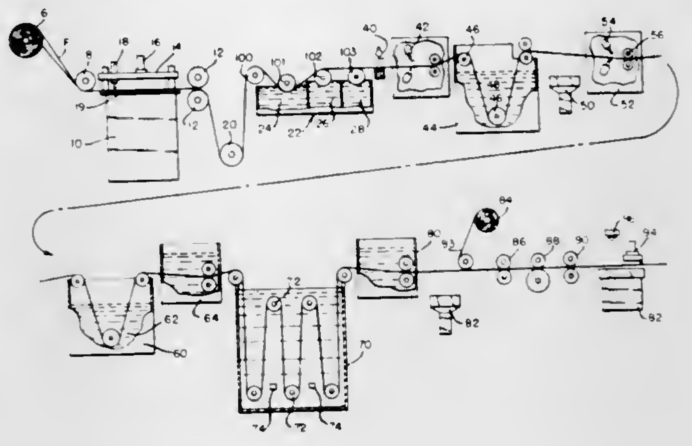
John D. Speakman, Hudson, Ohio, assignor to Metalphoto Corporation, a Division of Horizons Research Incorporated

Filed March 17, 1971, Ser. No. 125,189

Int. Cl. G03d *3/00*

U.S. Cl. 95—89 R **1 Claim**

An apparatus for processing anodized aluminum foil into articles bearing art work or other legends in a completely automated manner. The images in the anodized layer are silver images and are sealed in the pores of the anodized layer. The products are useful as name plates for motors and similar equipment, as markers on ships, etc.



3,702,582

MULTIFLASH DEVICE, SUCH AS FLASHCUBE, WITH MECHANICALLY IGNITABLE FLASHLAMPS

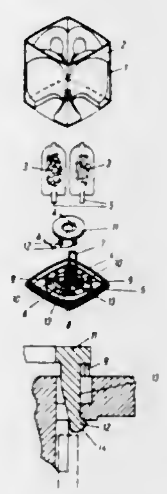
Werner Schilling, Heidenheim, and Josef Lukas, Augsburg, both of Germany, assignors to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbh, Munich, Germany

Filed July 1, 1971, Ser. No. 158,967

Claims priority, application Germany, July 23, 1970, P 20 36 588.2

Int. Cl. G03b *15/04*; **F21k** *5/02*

U.S. Cl. 95—11 L **7 Claims**



To prevent spurious firing of flashbulbs in a flashcube in which a striking mechanism is provided, adapted to be released by a camera release pin and to strike an ignition tube having ignition material therein, a safety retaining device in the form of a ring is provided bearing against the sear pins on the flashcube to prevent dislocation of the striking arm. The safety device is lifted off its seat against the sear pins only when the flashcube is inserted on the camera, by engagement of projections formed on the ring with the camera locating projections positioning the flashcube on the camera housing.

3,702,583

APPARATUS FOR PROCESSING FOOD

George B. Rullman, 738 East 7th St., Hastings, Nebr.

Continuation-in-part of Ser. No. 831,487, June 9, 1969, Pat. No. 3,505,072. This application April 6, 1970, Ser. No. 25,693

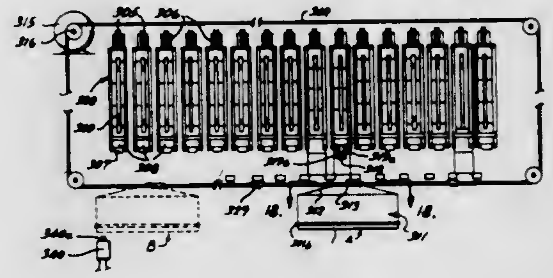
Int. Cl. A47j *37/00*

U.S. Cl. 99—335 **7 Claims**

A method and apparatus for controlling the processing of food in a processing environment includes the utilization of a time setting apparatus that may be remotely located from the processing environment.

One embodiment utilizes a push button operated control mechanism that automatically locates the food in the processing environment for a preselected time interval.

A second embodiment includes the use of a key punch apparatus which will produce a tape means for controlling the processing time of the food and at the same time provides a permanent record of the number of servings and types of food that was processed over a time interval.



A third embodiment utilizes a plurality of holders which store food of a preselected type and quantity. Circuitry is provided to control the automatic dispensing of selected food into a carrier with a hinged bottom and also the removal of the food therefrom either before or after it has gone through a cooking environment.

The above-mentioned embodiments are particularly usable in vending machines and other types of food processing apparatus.

3,702,584

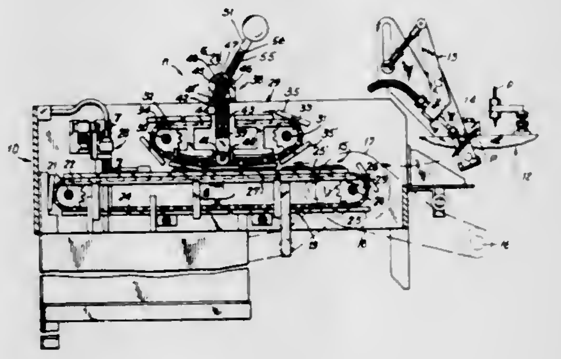
PROCESSING APPARATUS FOR LIQUID SATURATED TOWEL PACKETS

Donald G. Field, Trenton, N.J., assignor to Holland-Rantos Company, Inc., Piscataway, N.J.

Division of Ser. No. 22,274, March 24, 1970, Pat. No. 3,645,198. This application Nov. 4, 1971, Ser. No. 195,552

Int. Cl. B30b *13/00, 5/04*

U.S. Cl. 100—151 **2 Claims**



Apparatus for flattening, without wrinkling, sealed packets containing liquid saturated towels and for evenly distributing the liquid within the towel component and detecting leaks in said packets.

3,702,585

PRINTING MECHANISM PRODUCING A RUBBING ACTION

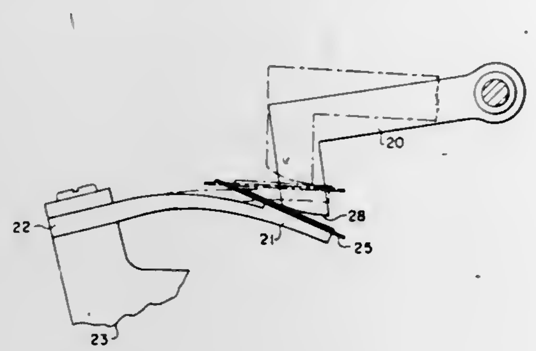
Donald E. Landis, and Mohanjit S. Sidhu, both of Cambridge, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed June 5, 1970, Ser. No. 43,816

Int. Cl. B41f *17/00*

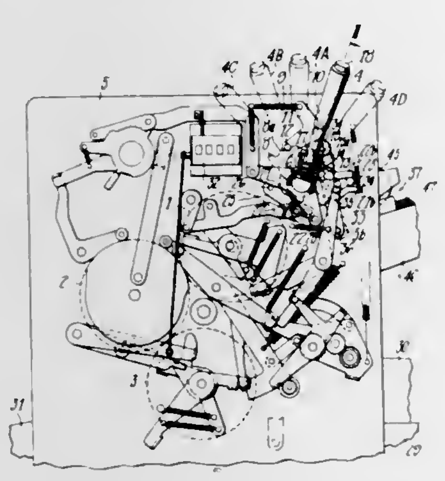
U.S. Cl. 101—1 **5 Claims**

A printing mechanism which includes a spring-mounted platen on which are positioned a record member and a printing ribbon. A hammer having a face formed of a convex surface is mounted so as to engage the platen and deflect it in a direction which results in the movement of the convex face of the hammer over the face of the platen to produce a rubbing action which transfers the printing material from the ribbon to the record material.



3,702,586
DEVICE FOR SWITCHING BETWEEN AUTOMATIC AND NON-AUTOMATIC MASTER PLATE FEEDING AND REMOVING OPERATIONS FOR OFFSET PRINTING MACHINES

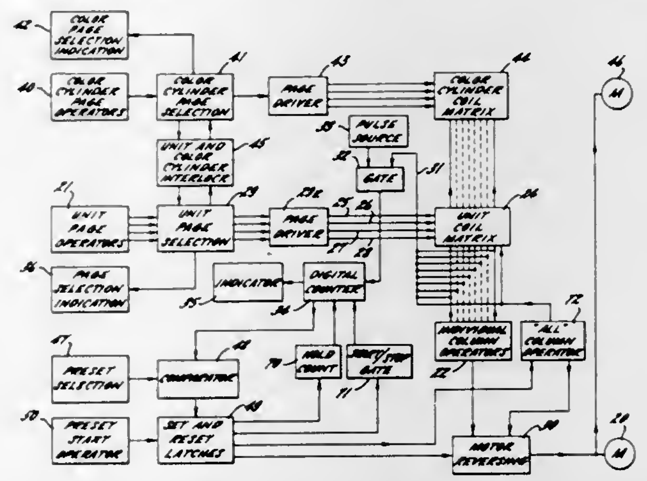
Tamaki Kaneko, and Katsumi Mizuno, both of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan
Filed Sept. 8, 1970, Ser. No. 70,003
Claims priority, application Japan, Sept. 13, 1969, 44/72886
Int. Cl. B41f *7/06, 7/26*
U.S. Cl. 101—142 **7 Claims**



A device for switching between automatic and non-automatic master plate feeding and discharging operations, such device being adapted for use with offset printing machines of the type in which an actuation member is operated in steps for causing the printing machines to perform a series of operations required for duplicating a master process. These operations include a master plate feeding operation for feeding a master plate to a master cylinder, an etching operation for applying an ink repellent etching solution to the master plate mounted on the master cylinder, an inking operation for applying ink to the master plate, a copy sheet feeding operation for feeding one copy sheet after another between blanket and impression cylinders, a master plate removal operation for removing the master plate from the master cylinder after completion of duplication, and a blanket cylinder cleaning operation. The device comprises an automatic, non-automatic switching actuation member capable of moving relative to said actuation member. If the actuation member is operated after the switching actuation member is operated, then the master plate feeding and removing operations can be performed automatically.

3,702,587
ELECTRONIC CONTROL SYSTEM FOR ADJUSTMENT OF INK FOUNTAIN IN A PRINTING PRESS

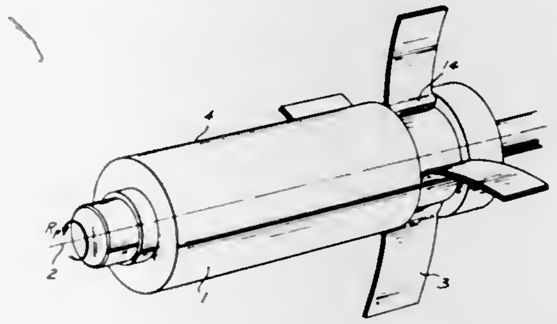
Bert Leonard Lee, Downers Grove, Ill., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed Oct. 12, 1970, Ser. No. 80,031
Int. Cl. B41f *31/04*
U.S. Cl. 101—207 **3 Claims**



An electronic system for adjusting the ink fountain in a printing press. The ink fountain includes a plurality of adjusting screws driven by a motor through a drive shaft which is clutched and declutched to the screws by means of a solenoid matrix. Energization of selected solenoids within the matrix is controlled by pushbuttons on a unit control panel. A first series of buttons is used to select the plate position at which the adjustment is to be effected, and a second series of pushbuttons is used to select the column position at which the adjustment is to be effected. A pair of separate unit control panels is provided at each printing unit in the press. A digital counter provides a visible indication of the magnitude of each adjustment commanded by the operator. The system may be used for presetting the press, as well as making adjustments during a press run. A color cylinder or half deck on the unit may be controlled through the same control panel used to control the balance of the unit.

3,702,588
DEVICE FOR A FLARE

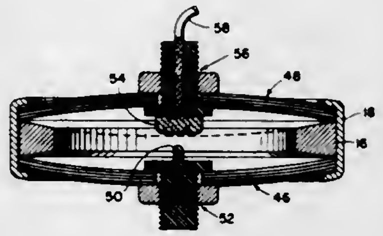
Bjorn Herman Olof Simmons, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden
Filed Dec. 16, 1970, Ser. No. 98,725
Claims priority, application Sweden, Jan. 8, 1970, 147/70
Int. Cl. F42b *13/32*
U.S. Cl. 102—35.6 **9 Claims**



A braking device for a flare unit including a combustible flare composition attached to a parachute which unit is ejected from a missile a predetermined period of time after firing of the missile and after ejection spins at a high speed about its lengthwise axis, brakes the spinning motion of the unit to a predetermined maximal rotational speed. To effect such reduction of the spinning speed within a minimum of time, the braking device comprises flaps which are initially folded one upon another and upon the body of the flare unit and are unfolded by the centrifugal force acting upon the flaps due to the spinning of the unit after the ejection thereof.

3,702,589
BIMETALLIC TEMPERATURE SENSING DEVICE

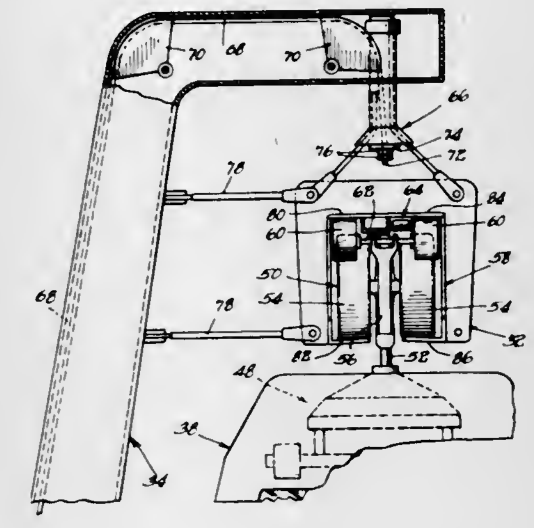
Virgil Erbert, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Feb. 8, 1968, Ser. No. 707,370
Int. Cl. F42c *19/10*
U.S. Cl. 102—70 **9 Claims**



A device for sensing temperature excursions beyond predetermined limits above and below the ambient temperature of the device or some associated equipment including a first bimetallic disc having a first stable curved configuration below a high temperature limit above ambient temperature and a second reversed, stable curved configuration above the high temperature limit, a second bimetallic disc convex with respect to the first disc in a first stable configuration above a low temperature limit below ambient temperature and having a second reversed, stable curved configuration below the low temperature limit with portions of the discs in constant engagement, and means for sensing any movement of either of the discs from their first to their second stable configurations.

3,702,590
MONORAIL SWITCHING DEVICE

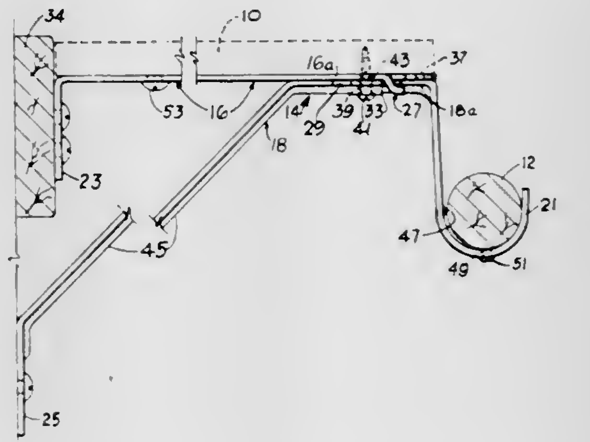
Robert W. Corey, 2405 Skyview, Richardson, Tex.
Filed Oct. 27, 1970, Ser. No. 84,274
Int. Cl. E01b *25/26*
U.S. Cl. 104—105 **17 Claims**



A vehicle switching arrangement comprises an overhead monorail guideway that includes a mainline section and a diverging section merging with the mainline section to define a switching station. In addition, a bogie unit is arranged for rollable transport along the guideway and includes port and starboard main wheels rollably engaging the guideway. The bogie unit also includes a guide arrangement for selectively acting against the guideway to load either the port or the starboard main wheels in excess of the normal vehicle load thereof for establishing a vehicle heading through the switching station. Furthermore, stationary fail-safe cams are provided on the guideway to cooperate with cam followers carried by the bogie unit for ensuring safe transit through the switching station in the event of malfunction.

3,702,591
ADJUSTABLE SHELF AND ROD BRACKET ASSEMBLY

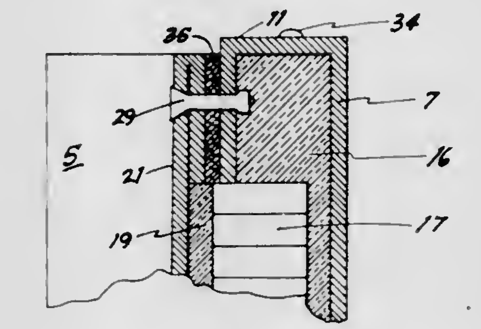
George Banse, Sterling, Ill., assignor to National Manufacturing Co., Sterling, Ill.
Continuation of Ser. No. 765,252, Oct. 4, 1968, abandoned.
This application Aug. 10, 1970, Ser. No. 62,725
Int. Cl. A47f *5/08*
U.S. Cl. 108—31 **3 Claims**



An adjustable shelf and rod bracket assembly for use in mounting a shelf and a clothes-hanger rod on a wall includes two members having overlapping and interlocking front portions, which are adapted to be fastened to the shelf. One of the members is a strut having a rod-receiving hook. The two members are interlockable in two different positions. When interlocked in one of its positions, the bracket can be mounted flush against the wall, and when interlocked in its other position, the bracket can be mounted such that one of its members is attached to a molding on the wall.

3,702,592
FIRE RETARDANT CONTAINER

Edward R. Gamble, Clayton, Mo., assignor to American Air Filter Company, Inc., Louisville, Ky.
Filed Nov. 18, 1970, Ser. No. 90,727
Int. Cl. E05g *1/00*
U.S. Cl. 109—29 **5 Claims**

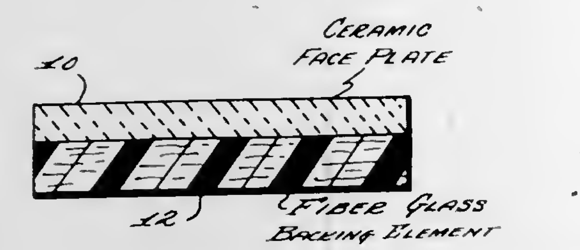


A fireproof container having an outer housing, an inner housing, and heat protection means disposed between the outer and inner housings. The heat protection means includes an ablative material.

3,702,593
REMOVAL OF SURFACE FROM BORON CARBIDE COMPOSITE ARMOR

Richard A. Fine, Rochester, Minn., assignor to Norton Company, Worcester, Mass.
Filed Oct. 21, 1968, Ser. No. 772,062
Int. Cl. F41h *5/04*
U.S. Cl. 109—80 **2 Claims**

The protective capability of composite armor panels is increased by removing material from the outermost layer or layers of the ceramic face plate thereof, of a thickness of from



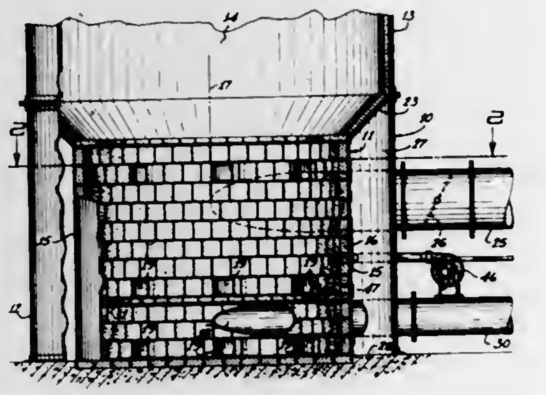
about 0.003 to about 0.050 inch, and then adhering said plate to a backing element.

3,702,594
SYSTEM FOR CONTROLLING THE BURNING OR STOCK PILING OF REFUSE ACCORDING TO OPERATING CONDITIONS OF AN INCINERATOR

Leslie D. Howes, Phoenix, Ariz., assignor to Garland Steel Company, Phoenix, Ariz., a part interest

Filed Sept. 20, 1971, Ser. No. 181,672
Int. Cl. F23g *5/12*

U.S. Cl. 110—8 R **14 Claims**



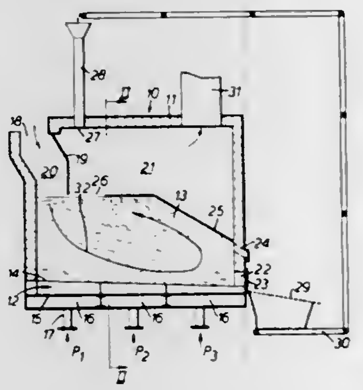
An automatic monitoring system for burning or stock piling refuse implemented by controlling the operation of an improved incinerator according to its operating conditions at any given point of time.

3,702,595
FLUIDISED BED INCINERATORS

Duncan Ronald Muirhead, Yorkshire, and Douglas Allison Michell, Teesside, both of England, assignors to The Power-Gas Corporation, Limited, Stockton-on-Tees Teeside, England

Filed Feb. 4, 1971, Ser. No. 112,597
Int. Cl. F23g *5/00*

U.S. Cl. 110—8 R **9 Claims**



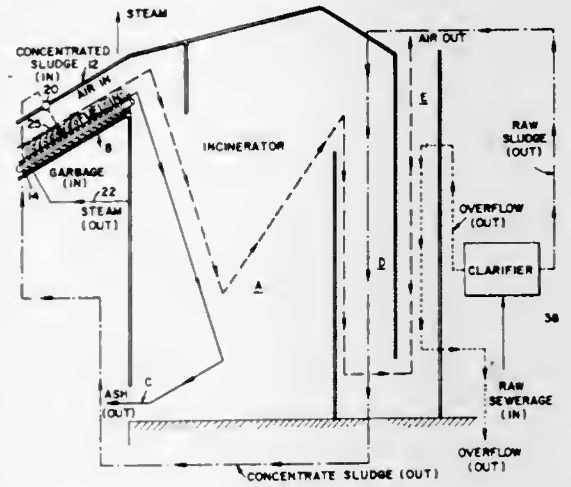
In a fluidized bed incinerator suitable for burning combustible refuse the refuse is deposited on the surface of one region of a bed of hot particulate refractory material contained in a vessel, the bed is fluidized in such a manner to cause the bed material to circulate so that the refuse deposited on the surface of the first region is drawn into the bed where the combustible content of the refuse is burnt and the non-combustible content of the refuse is displaced while submerged in the bed to a second region spaced horizontally from the first region and from which region the non-combustible content is removable from the bed.

3,702,596
INCINERATOR SLUDGE CONCENTRATOR COMBINATION

John L. Winther, 263 Calle La Mesa, Moraga, Calif.

Filed Feb. 24, 1971, Ser. No. 118,245
Int. Cl. F23g *5/04*

U.S. Cl. 110—8 R **6 Claims**



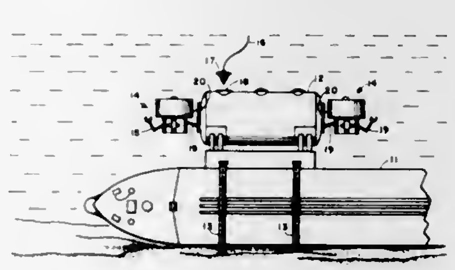
Garbage incineration and raw sewage sludge concentration are combined. The hot gas outflow of an incinerator is used to concentrate by dehydration raw sludge received from a sewage clarifier. After simultaneously reducing the moisture content of the raw sludge and scrubbing the exhaust gas, the gases from the incinerator are again scrubbed, typically with the outflow from the clarifier or alternately with raw sewage to remove noxious gases of combustion and particularly to prevent undesirable high vapor content.

3,702,597
SALVAGE WORK VEHICLE

William T. Odum, Panama; James H. Elkins, Lynn Haven, and Thomas M. Coggings, Panama City, all of Fla., assignors to The United States of America as represented by the Secretary of the Navy

Filed April 7, 1971, Ser. No. 132,032
Int. Cl. B63g *8/24*

U.S. Cl. 114—16.8 **10 Claims**



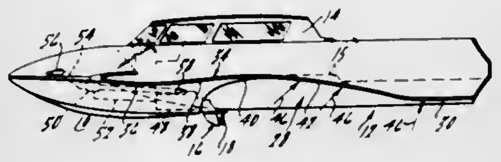
A salvage work vehicle having attachment means to provide propulsive engagement with large salvage pontoons is disclosed. The attachment of vehicle and pontoon is accomplished by means of a vacuum attachment coupler.

3,702,598
WATERCRAFT

Jack J. Szptyman, 910 N. Brys Drive, Grosse Pointe Woods, Mich.

Filed June 7, 1971, Ser. No. 150,419
Int. Cl. B63b *1/38*

U.S. Cl. 114—67 A **19 Claims**



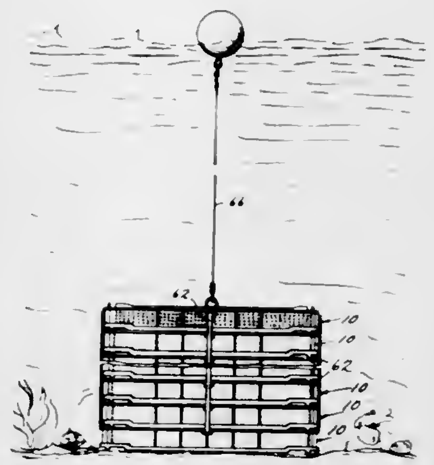
A watercraft having a tunnel hull with an aerodynamic curvilinear lifting surface and a propulsion means forward of the aerodynamic lifting surface. The tunnel preferably longitudinally extends substantially the full length of the boat and receives a continuous air flow derived from the forward motion of the craft which acts on the aerodynamic lifting surface to provide a craft lifting force. The craft may be optionally provided with a second air flow passage for the tunnel which includes an air propelling means supplying forced hot air to the tunnel forward of the lifting surface to aid in the generation of the lifting force. In its preferred form, the lift surface has an air foil-like cross section which provides a concave trapping area to augment the lifting effect of the aerodynamic lifting surface. In a first embodiment, a single propulsion device is shown while in a second embodiment three propelling devices and two aerodynamic lifting surfaces are shown in tandem.

3,702,599
SHELLFISH GROWOUT TRAY

Ralph H. Herolzer, Cincinnati, Ohio, assignor to Vanguard Industries Inc., Cincinnati, Ohio

Filed May 27, 1971, Ser. No. 147,583
Int. Cl. A01k *61/00*

U.S. Cl. 119—4 **12 Claims**



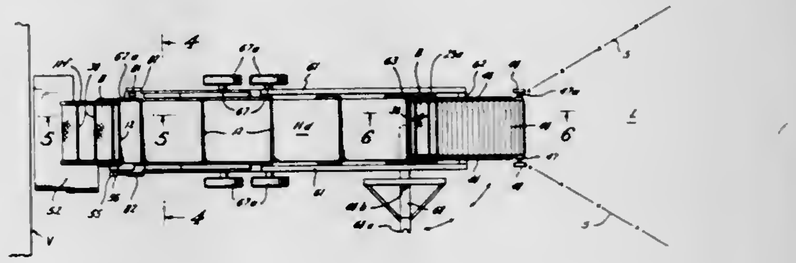
A device for sustaining the growth of shellfish, such as oysters and the like, comprising a one-piece, molded plastic tray consisting of a bottom wall and four side walls providing an open top for the efficient loading of immature shellfish into the tray, the tray having stacking rails and tray supporting surfaces enabling the loaded tray to be guidingly moved into a stable operative stacked relation with a plurality of like loaded trays wherein adjacent trays define an operative growth space therebetween, the bottom wall being operative to support immature shellfish and provide with perforations permitting efficient unitary movement of the operatively stacked trays into and out of an operative position within the water environment of growth, the side walls being perforated so that when the tray is in such operative position sufficient water flow through the operative space is provided to nourish the growing shellfish while predatory water life is excluded therefrom, the height of the side walls being such that the operative space is sufficient to permit growth of the shellfish to maturity while insuring an efficient number of operative spaces within a given stack height.

3,702,600
POULTRY LOADING APPARATUS

Charles R. Bright, and Walter L. Harris, both of 803 West Seale Street, Nacogdoches, Tex.

Filed Dec. 9, 1970, Ser. No. 96,535
Int. Cl. A01k *29/00*

U.S. Cl. 119—82 **11 Claims**



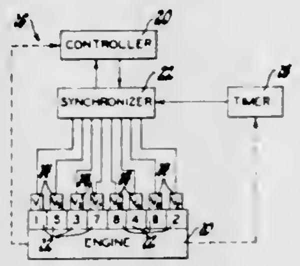
A new and improved poultry loading apparatus is provided for loading and unloading poultry and fowl, such as turkeys, chickens and the like, onto vehicles or other structures.

3,702,601
ELECTRONIC FUEL INJECTION SYSTEM

Colin C. Gordon, Cincinnati, Ohio, and John P. McGavic, Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

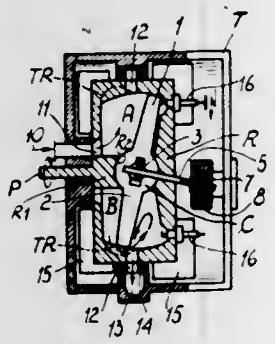
Filed June 11, 1971, Ser. No. 152,088
Int. Cl. F02m *51/00*

U.S. Cl. 123—32 EA **6 Claims**



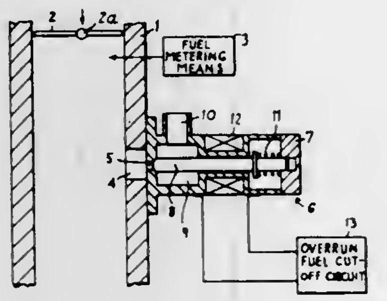
An internal combustion engine includes a group of eight fuel injectors for applying fuel to the engine. A set of four timing signals developed in synchronization with engine operation collectively contain eight magnitude permutations per engine cycle. The occurrence of each of the magnitude permutations defines the start of injection for a corresponding one of the fuel injectors. The set of timing signals is combined to form a pair of timing signals which are combined to form a single timing signal containing all of the magnitude permutations. A single pulse train developed in synchronization with the single timing signal contain eight control pulses per engine cycle. The length of each of the control pulses defines the period of injection for a corresponding one of the fuel injectors in time compressed nonoverlapping relationship. The single pulse train is separated by the single timing signal to form a pair of pulse trains which are separated by the pair of timing signals to form a set of four pulse trains collectively containing all of the control pulses. The length of the control pulses in the set of pulse trains is extended to define the period of injection for the fuel injectors in time expanded overlapping relationship. Lastly, the set of pulse trains is separated by the set of timing signals to form a series of eight pulse trains each containing control pulses which are applied to energize a corresponding one of the group of eight fuel injectors.

3,702,602
TWO STROKE ROTARY COMBUSTION ENGINE
Umberto Lotesto, Via Borsinotta, Robecco sul Naviglio, Italy
Filed Feb. 26, 1971, Ser. No. 119,149
Claims priority, application Italy, March 2, 1970, 21367 A/70
Int. Cl. F02b *53/00*
U.S. Cl. 123—45 R **3 Claims**



A two stroke rotary combustion engine comprising a rotor rotatably supported in a frame and having a cavity divided by an intermediate internal wall into two compartments at opposite parts, said internal wall having a through seat which rotatably houses intermediate portions of a plate like piston element having wing like portions which divide each part into, a front combustion chamber with ignition means and feeding and exhaust ducts, and a rear part.

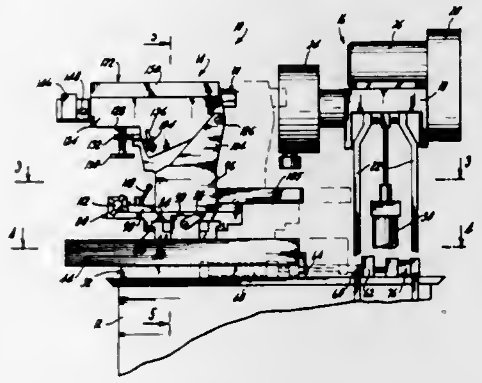
3,702,603
INTERNAL COMBUSTION ENGINES
Albert Edward Baxendale, and Edward John Young, both of Coventry, England, assignors to Brica Engineering Limited, Coventry, England
Filed Nov. 13, 1970, Ser. No. 89,279
Claims priority, application Great Britain, Nov. 21, 1969, 57,186/69
Int. Cl. F02d *11/10, 9/00*
U.S. Cl. 123—97 B **2 Claims**



An internal combustion engine is provided with valve means for admitting air to the engine inlet manifold downstream of the throttle valve, and the valve means is operative to pass air to the inlet manifold under engine over-run conditions when the throttle valve is closed, the supply of fuel is cut-off and the engine speed is substantially above idling speed.

There is also described a fuel injection system having a plurality of fuel injection valves arranged to supply fuel to an engine and including means which are operative, after the supply of fuel has been cut-off during engine over-run conditions, to deliver fuel to the engine via a plurality of the fuel injection valves simultaneously.

3,702,604
WORK MOUNTING MECHANISM IN SLICING MACHINE
Don R. Jones, Wayne, N.J., assignor to Silicon Technology Corporation, Oakland, N.J.
Filed May 20, 1971, Ser. No. 145,225
Int. Cl. B23d *45/08, 47/04*
U.S. Cl. 125—14 **6 Claims**

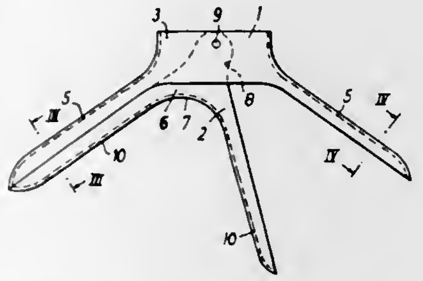


A machine for slicing wafers of brittle material from an ingot in which the ingot to be sliced is secured for stepwise movement into the path of a rotating saw blade which moves through a slicing path perpendicular to the direction of movement of the ingot. The mounting means for the ingot includes a way table mounted on a fixed base for movement between a cutting position adjacent said saw blade and a clearance position away from the said saw blade. Positive stop means define the cutting position of the way table such that the ingot can be moved away from the saw and back to the saw with an accurate repositioning of the ingot in its cutting position. A variety of adjustable mounting means are provided to mount the ingot on the way table whereby the ingot may be oriented vertically, horizontally and axially for proper angle of cut.

3,702,605
CELL DISPERSAL METHOD FOR MONKEY KIDNEY TISSUE
William F. Daly, Hillsdale, and Ronald J. Vallancourt, Park Ridge, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.
Filed May 17, 1971, Ser. No. 144,405
Int. Cl. A61b *19/00*
U.S. Cl. 128—1 R **11 Claims**

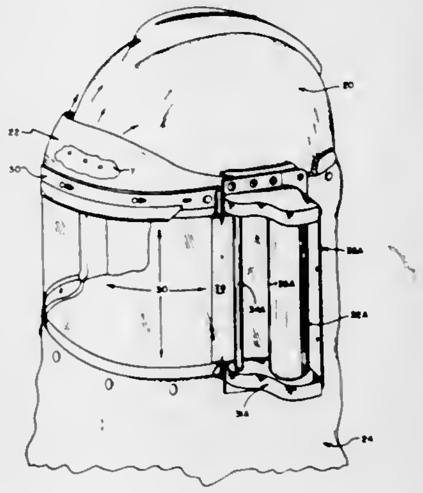
A method for increasing the cell yield from mammalian kidney tissue by perfusion of the decapsulated kidney *in situ* with a proteolytic enzyme under pressure and a means for dispersal of the cells by mechanical agitation.

3,702,606
SPECULUM
Roy Albert Drake Barnard, Devon, England, assignor to Rancray Limited, London, England
Filed April 22, 1971, Ser. No. 136,491
Claims priority, application Great Britain, April 21, 1970, 19,124/70
Int. Cl. A64b *1/32*
U.S. Cl. 128—17 **3 Claims**



A speculum has a first portion consisting of two arms extending from a central part at an angle to one another and a second portion consisting of two arms extending from a central part at an angle which is less than the angle between the arms of the first portion. The central parts of the two portions are pivoted together with the arms of the second portion movable in the arc between the arms of the first portion for selective engagement of an arm of each portion to form a cavity dilating means. The arms for forming the cavity dilating means are so dimensioned that the two cavity dilating means are adapted to dilate different size cavities, the arrangement being such that when an arm of each portion has been brought together the two other arms constitute handles.

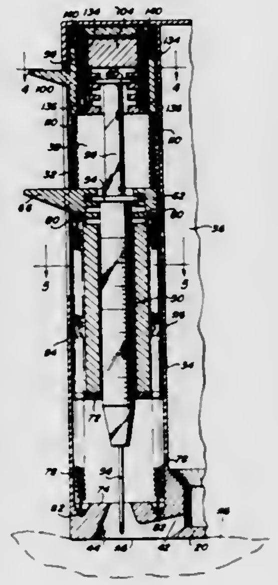
3,702,607
IMPROVED SPRAY MASK
Roy G. Tucker, Whitman; David H. Blasenak, Bridgewater; Ralph W. Johnson, Quincy, all of Massachusetts
Filed May 13, 1971, Ser. No. 143,154
Int. Cl. A62b *18/04*
U.S. Cl. 128—**142.7** **2 Claims**



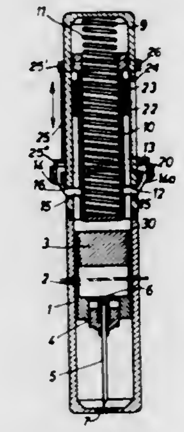
A spray mask comprising a safety hat to which is coupled a clear plastic face shield and a cloth shroud cover from the brim thereof to the user's shoulder. Clear acetate film is so arranged in canisters coupled to the mask as to facilitate the film being quickly and efficiently caused to move across the face shield, thereby ensuring that the user's vision is continuously maintained despite overspray conditions. The mask also comprises a ventilation system.

3,702,608
PAINLESS INJECTION DEVICE WITH POWERED PLUNGER
Robert C. Tibbs, Hospital Drive, Cleveland, Miss.
Filed Dec. 15, 1970, Ser. No. 98,400
Int. Cl. A61m *5/22*
U.S. Cl. 128—218 F **11 Claims**

An injecting device for a hypodermic syringe including, in a first form of the invention disclosed, structure for supporting a syringe and projecting the needle of the syringe into a skin tissue area against which a predetermined portion of the device has been placed. Structure is also provided for advancing the plunger of the syringe relative to the barrel portion thereof after the syringe has been projected in order to force the needle thereof into the skin tissue. A second form of the invention includes not only structure for accomplishing these same functions but also additional structure for slightly retracting the plunger of the syringe relative to the barrel portion thereof during the latter portion of the stroke of the syringe during projection of the latter as the syringe needle penetrates the adjacent skin tissue to produce aspiration for detecting whether the needle has penetrated a blood vessel.



3,702,609
HYPODERMIC SYRINGES, IN PARTICULAR SELF-INJECTING SYRINGES
Maurice Steiner, 40 bis avenue de Suffren, 75-Paris 15, France
Filed Nov. 19, 1969, Ser. No. 877,958
Claims priority, application France, Nov. 21, 1968, 68174769; April 11, 1969, 6911218
Int. Cl. A61m *5/00, 5/20*
U.S. Cl. 128—218 F **4 Claims**



A hypodermic syringe having a body, an ampoule slidably mounted in said body and containing a liquid to be injected and having a front wall and rear inlet orifice. A needle is slidably carried by said ampoule and has a rear part adapted to pierce said front wall. A closure member for the inlet orifice is slidably mounted in the ampoule, and a plunger tube having an external diameter smaller than the internal diameter of the ampoule is slidably mounted in said body, and the tube is urged toward the closure member by a spring. A threaded nut is adjustably mounted on the tube and has an external diameter larger than the internal diameter of the ampoule to form a stop for the plunger and thereby to permit the injection of a predetermined amount of liquid.

3,702,610

FLUSHABLE WEB CONTAINING FLUSHABILITY INDICATOR, AND ABSORBENT PADS WRAPPED THEREWITH

Milton R. Sheppard, Appleton, and William Leland Henderson, Neenah, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed April 29, 1971, Ser. No. 138,742

Int. Cl. A61f *13/16*

U.S. Cl. 128—284 **16 Claims**

A means for indicating when a sanitary napkin or diaper wrapped with a web bonded with a spaced pattern of water-dispersible adhesive is in condition for flushing away after it is dropped in a toilet for disposal. The indicating means is provided by including a water-soluble coloring agent or dye in the water-dispersible adhesive composition. As the water disperses the adhesive, the dye migrates into the non-bonded area of the web or is diluted in the excess water, and the adhesive pattern substantially disappears, thus indicating that the adhesive has become softened sufficiently to permit the wrapper to be broken up readily by the flushing action of the water.

3,702,611

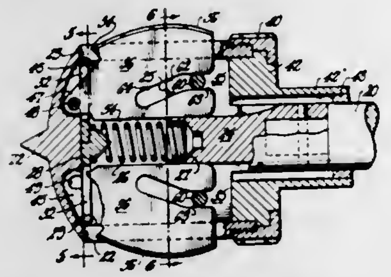
SURGICAL EXPANSIVE REAMER FOR HIP SOCKET

Meyer Fishbein, 12020 Saltair Place, Los Angeles, Calif.

Filed June 23, 1971, Ser. No. 155,718

Int. Cl. A61b *17/32, 17/16;* **B23b** *51/00*

U.S. Cl. 128—305 **7 Claims**



An expanding reamer is provided for surgical reaming of the acetabulum in hip surgery. The reamer includes a head with a convex end adapted to seat in a previously prepared concavity in the central part of the acetabulum. This head pivotally mounts a set of radially expansive blades. It is telescopically mounted on the end of a rotary drive shaft, and the drive shaft mounts a cam actuator which engages cam elements to expand the cutters progressively in response to axial thrust exerted on the drive shaft by the surgeon with the reamer head seated in the acetabulum. A spring is used to contract the cutters when the reaming operation is interrupted.

3,702,612

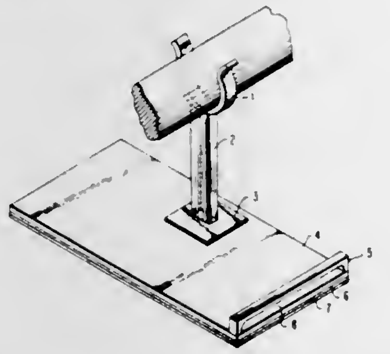
CATHETER SUPPORT

Robert M. Schlesinger, 25 Gardner Road, Brookline, Mass.

Filed March 1, 1971, Ser. No. 122,639

Int. Cl. A61m *25/02*

U.S. Cl. 128—350 R **5 Claims**



A catheter support has a yoke attached to a base plate by a resilient beam capable of accommodating limited motion of the catheter without pulling the catheter from the patient. The base plate has an adhesively-backed surface for placement on a patient's body surface.

3,702,613

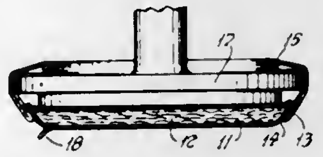
ELECTROLYTE ENVELOPE FOR USE ON THE ACTIVE SURFACE OF A DEFIBRILLATOR PADDLE

Joseph Panico, Arlington, and Michael Lopin, Cambridge, both of Mass., assignors to Health Systems, Inc, Woburn, Mass.

Filed March 4, 1971, Ser. No. 120,901

Int. Cl. A61n *1/18*

U.S. Cl. 128—417 **3 Claims**



A device for use in housing and providing conductive fluid to the interface between the operative surface of a defibrillator paddle and the surface or point of application of the human body. The device houses or stores the conductive fluid in a sterile, conductive envelope ready for use on the operative surface of said paddle. The envelope is ruptured immediately prior to use and the ruptured surface is applied to the surface of the human body.

3,702,614

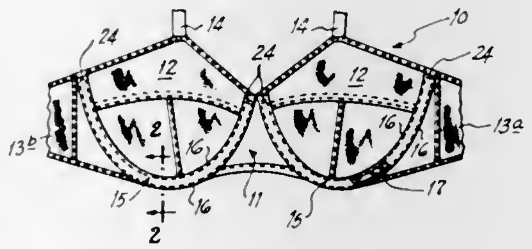
BRASSIERE AND SUPPORTING FRAMES THEREOF

Richard Miller, Yonkers, N.Y., assignor to Maid-Mar Industries, Inc., Long Island City, N.Y.

Filed Aug. 2, 1971, Ser. No. 167,994

Int. Cl. A41c *3/00*

U.S. Cl. 128—476 **16 Claims**



A brassiere frame is made up of an elongated arcuate wire-like support element of metal or plastic and end elements of plastic engaged with the end portions of the support element and each including a socket portion in which the respective end portion of the support element is longitudinally slidable and a relatively thin tab or flange portion extending from the socket portion and being adapted to be sewn through. A brassiere frame, as aforesaid, is positioned in the usual fabric tunnel or pocket provided along the lower arcuate perimeter of each cup-forming section of a brassiere and the tab or flange portions of the end elements are secured within the tunnel by stitching passing therethrough. Upon shrinking of the brassiere, the end elements of each frame slide longitudinally relative to the support element to insure that the ends of the frame will not tear through the ends of the fabric tunnel.

3,702,615

NON-TOBACCO SMOKEABLE, CHEWING AND DIPPING PRODUCT

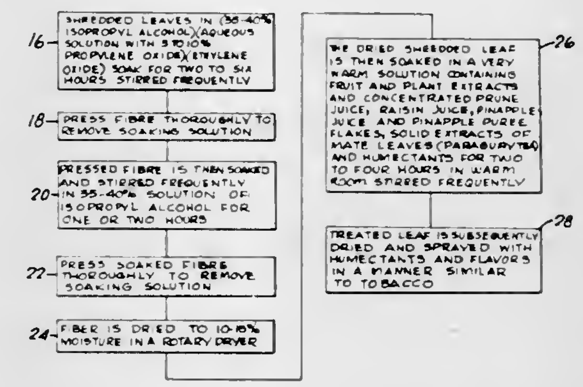
Eugene E. Rozacky, and Rebecca Rozacky, both of 1304 Wentwood Drive, Irving, Tex.

Filed July 27, 1970, Ser. No. 58,624

Int. Cl. A24b *15/00;* **A24d** *01/18*

U.S. Cl. 131—2 **3 Claims**

A process for aging and forming derivatives or adducts of the chemical composition of fresh leaves of certain non-toxic plants (excluding tobacco) and vegetables to produce a leaf product having aroma, taste and burning characteristics similar to commercial tobacco products but free of nicotine.


16
SHREDDED LEAVES IN (35-40% ISOPROPYL ALCOHOL)(AQUEOUS SOLUTION WITH 5 TO 10% PROPYLENE OXIDE)(ETHYLENE OXIDE) SOAK FOR TWO TO SIX HOURS STIRRED FREQUENTLY
18
PRESS FIBRE THOROUGHLY TO REMOVE SOAKING SOLUTION
20
PRESSED FIBRE IS THEN SOAKED AND STIRRED FREQUENTLY IN 35-40% SOLUTION OF ISOPROPYL ALCOHOL FOR ONE OR TWO HOURS
22
PRESS SOAKED FIBRE THOROUGHLY TO REMOVE SOAKING SOLUTION
24
FIBER IS DRIED TO 10-16% MOISTURE IN A ROTARY DRYER
26
THE DRIED SHREDDED LEAF IS THEN SOAKED IN A VERY WARM SOLUTION CONTAINING FRUIT AND PLANT EXTRACTS AND CONCENTRATED PRUNE JUICE, RAISIN JUICE, PINAPPLE JUICE AND PINAPPLE PUREE FLAKES, SOLID EXTRACTS OF MATE LEAVES (PARAGUAY TEA) AND HUMECTANTS FOR TWO TO FOUR HOURS IN WARM ROOM STIRRED FREQUENTLY
28
TREATED LEAF IS SUBSEQUENTLY DRIED AND SPRAYED WITH HUMECTANTS AND FLAVORS IN A MANNER SIMILAR TO TOBACCO

3,702,616

CONSTRUCTION FOR USE AS A HAIRDRESSING TOOL AND AS A STEAM IRON

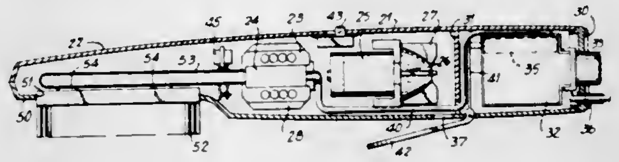
Norman J. Mercer, 575 Park Avenue, New York, N.Y.

Filed March 23, 1971, Ser. No. 127,184

Claims priority, application Japan, Nov. 5, 1970, 45/96889; Dec. 10, 1970, 45/109018

Int. Cl. A45d *1/00*

U.S. Cl. 132—9 **13 Claims**



An appliance including an elongate hand-held body having a working head on one end carrying fluid dispensing means, and fluid heating means in the body for heating fluid dispensed, and selectively operable actuating means for determining the type and temperature of fluid dispensed.

3,702,617

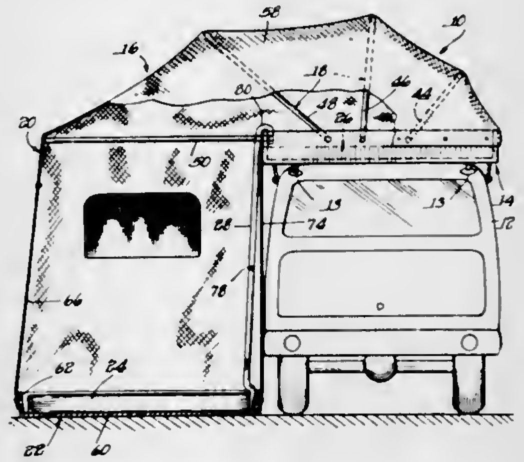
COLLAPSIBLE SHELTER FOR MOUNTING ON A TRANSPORTATION VEHICLE

Edwin F. Franzen, 3673 Randolph Street, Lansing, Ill.

Filed Sept. 14, 1970, Ser. No. 71,988

Int. Cl. E04b *1/347*

U.S. Cl. 135—1 A **2 Claims**



A collapsible shelter particularly adapted for mounting on a transportation vehicle. The collapsible shelter includes a rigid receptacle mounted on a vehicle and a collapsible shelter roof stored in the receptacle and extendable from the receptacle to provide sheltered sleeping accommodations. The collapsible shelter includes a rigid receptacle cover which, in a stored attitude, covers the receptacle to protect the interior. However, the cover is removable to provide additional sleeping space under an extended portion of the shelter roof. A plurality of supports is connected to the shelter roof and to the receptacle for supporting the roof above the receptacle.

3,702,618

COLLAPSIBLE UMBRELLA

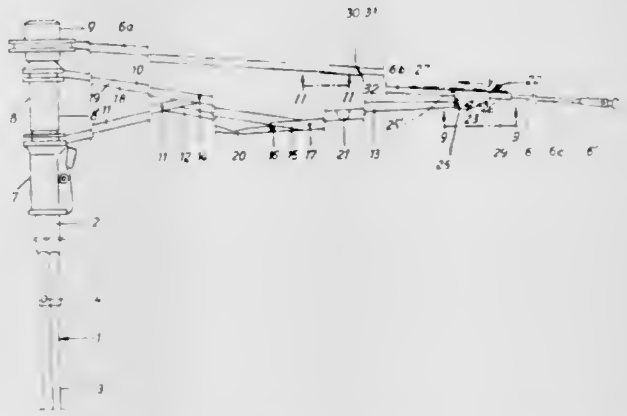
Heinz Weber, Hilden, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada

Filed June 19, 1970, Ser. No. 47,688

Claims priority, application Germany, July 25, 1969, P 19 37 892.8; July 25, 1969, G 69 29 504.1; Oct. 25, 1969, P 19 53 796.3

Int. Cl. A45b *19/00*

U.S. Cl. 135—25 R **6 Claims**



The umbrella has a telescopic stick and the dome ribs are each of three telescopic sections and stretcher means to support the dome ribs, the stretcher means hingedly connected to the outer stretcher section and a geats saddled over the dome ribs and housing the hinge connection and being slidable on the dome rib.

3,702,619

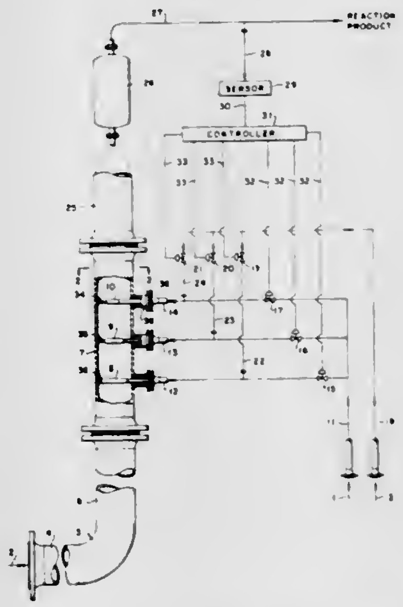
IN-LINE MIXING APPARATUS FOR GASES

Jaime S. Son, El Cerrito, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Jan. 28, 1971, Ser. No. 110,494

Int. Cl. F16k *19/00*

U.S. Cl. 137—3 **5 Claims**



A first gaseous stream is rapidly dispersed into a second flowing gaseous stream in an inline mixing apparatus comprising a mixing zone containing (a) an inlet for the introduction into said mixing zone of the second gaseous stream at one end of the zone; (b) a gas velocity- and static pressure-stabilizing zone downstream from the inlet; (c) downstream from the gas velocity- and static pressure stabilizing zone at least one sparging means having a plurality of uniformly distributed orifices on its downstream surface for the injection of the first gaseous stream into the second flowing gaseous stream, any successive sparging means having a smaller diameter than the means located upstream thereof; and (d) an outlet for the resulting mixed first and second gases from the mixing zone.

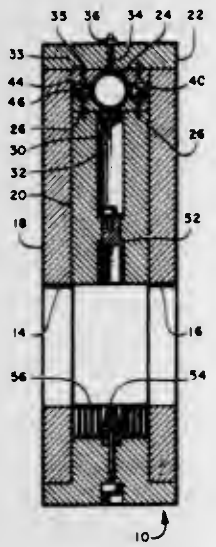
3,702,620
ACTUATOR SYSTEM

Harold D. Howell; Thomas O. Hunter, both of Albuquerque, and Robert E. Stinebaugh, Peralta, all of N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Aug. 10, 1971, Ser. No. 170,438

Int. Cl. F16k *31/12*

U.S. Cl. 137—68 **8 Claims**



An actuator system particularly suitable for quickly imparting motion to closure members or bodies of relatively large mass, wherein a reservoir of high pressure gas is provided adjacent a piston portion of the body to be moved so that rupture of the reservoir by a shaped charge of explosive rapidly releases the gas to thereby effect very rapid movement or velocity of the closure member or body.

3,702,621
HYDRAULIC SERVO VALVE

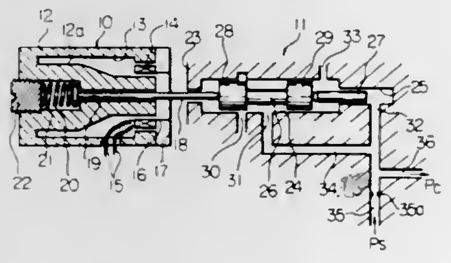
Yohichi Mohri, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Jan. 26, 1971, Ser. No. 109,792

Claims priority, application Japan, Feb. 3, 1970, 45/9104

Int. Cl. F15b *5/00*

U.S. Cl. 137—85 **10 Claims**



A hydraulic servo valve for varying a fluid pressure, which servo valve comprises a control valve and an actuator, the control valve including a valve spool associated with the actuator to produce a reduced pressure and a feedback piston responsive to the reduced pressure to control the movement of said valve spool for thereby varying the fluid pressure.

3,702,622
PNEUMATIC PRESSURE REDUCING VALVE WITH RAPID DISCHARGE

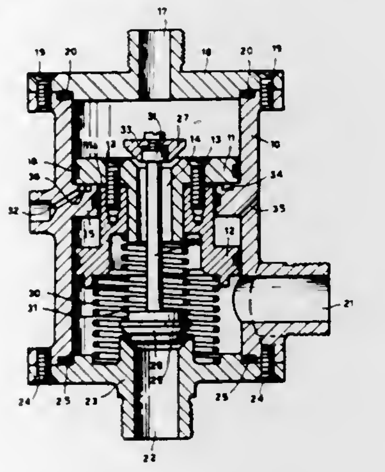
Giancarlo Michellone, Strada delle Camporelle, Cambiano, Italy

Filed Jan. 27, 1971, Ser. No. 110,230

Claims priority, application Italy, Feb. 3, 1970, 67329 A/70

Int. Cl. B60t *8/18;* **G05d** *7/00*

U.S. Cl. 137—107 **1 Claim**



A pressure reducing valve has a plunger having an axial hole, which plunger is movable in a valve body between two extreme positions defined by stops and under the action of resilient means. A stem valve is movable in the axial hole and is adapted to assume a stop position such that it closes the axial hole when the plunger is in a rest position and that it leaves the hole open when the plunger is in the other positions. A control aperture admits a control pressure to a reaction surface on the plunger in order to produce a regulable increase in the resistance offered by the resilient means to the movement of the plunger.

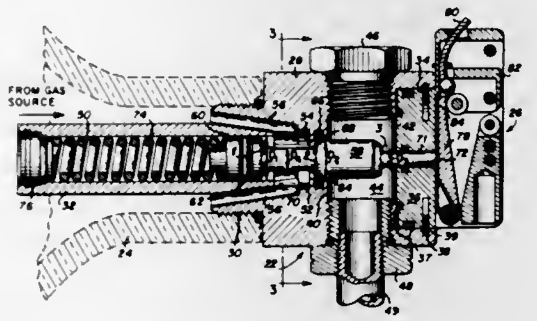
3,702,623
FLUID PRESSURE REGULATION MECHANISM HAVING UPSLOPE REGULATING CHARACTERISTICS

Joseph Chacko, San Francisco, Calif., assignor to Sargent Industries, Inc., Los Angles, Calif.

Continuation of Ser. No. 845,742, July 29, 1969, abandoned. This application Aug. 21, 1970, Ser. No. 68,511

Int. Cl. F16k *17/40*

U.S. Cl. 137—495 **33 Claims**



A fluid pressure regulating mechanism for use in bag inflation systems, and the like, which includes an unbalanced piston, poppet arrangement which causes the output pressure of the gas flow regulated thereby to be increased as the pressure of the high pressure gas supplied thereto decreases. A principal advantage of the use of this device in a bag inflation system is that it causes the pressure of the gas supplied to the jets of the aspirator to be increased as the bag is inflated so as to tend to counter the loss in aspirator efficiency which results due to the back pressure which progressively builds up downstream of the aspirator.

3,702,624
PISTON PUMP

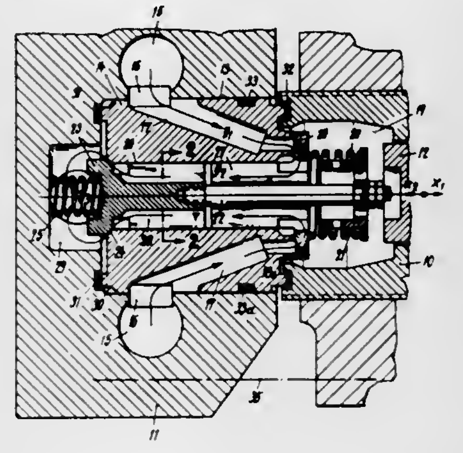
Hugo Fries, Urach, Germany, assignor to Pumpenfabrik Urach, Urach, Germany

Filed Sept. 12, 1969, Ser. No. 857,373

Claims priority, application Germany, Sept. 17, 1968, P 17 28 243.8

Int. Cl. F16k *15/08*

U.S. Cl. 137—512 **10 Claims**



A piston pump in which the cylinder head encloses the valve housing in such a manner that the delivery valve chamber which is located behind the delivery valve, as seen in the direction of flow of the fluid conveyed through the pump, needs to be sealed relative to the outside only by a single high-pressure gasket which is provided between this valve chamber and the intake line.

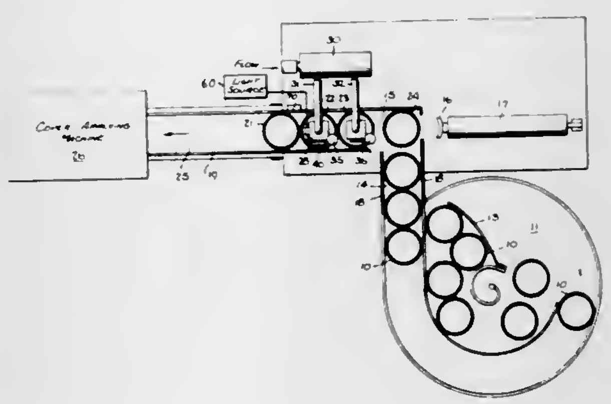
3,702,625
APPARATUS AND METHOD FOR AUTOMATICALLY FILLING CONTAINERS WITH FLUID MATERIAL

Richard Schmidt, Crestwood, N.Y., assignor to Proctor Paint and Varnish Co. Inc., Yonkers, N.Y.

Filed July 9, 1970, Ser. No. 53,588

Int. Cl. B65b *1/04, 3/04*

U.S. Cl. 141—1 **14 Claims**



An improved method and apparatus for automatically filling a plurality of containers in sequence with flowable material includes two valves and controls for selectively providing flow from one valve to one container at a time or simultaneous flow from both valves to two containers at a time. The operation of both valves is controlled by a single container position sensor and a material level sensor. Specifically, a line of containers feeds sequentially under each valve in turn. If simultaneous operation is selected, a first valve partially prefills one of the containers in line during the time that a second valve completes the filling of the container in the final position. Both valves are opened simultaneously by a signal from the container position sensor when containers are properly positioned beneath the valves, and are shut simultaneously by a signal from a material level sensor connected to the second valve when the container in the final position is filled to a predetermined level. Alternatively, either valve can be selected to operate independently to sequentially fill the line of containers while the other valve and its supply lines are cleaned.

In the preferred embodiment the container position sensor is a mechanically actuated electrical switch and the fluid level sensor is a photoelectric system operated in conjunction with a fiber optic system. The preferred embodiment also includes an improved control circuit with safety provisions to prevent double-filling of a given container, false triggering of the fluid level sensor, and a timed shutoff control for the flow control valves in the event of failure in the fluid level sensor circuit.

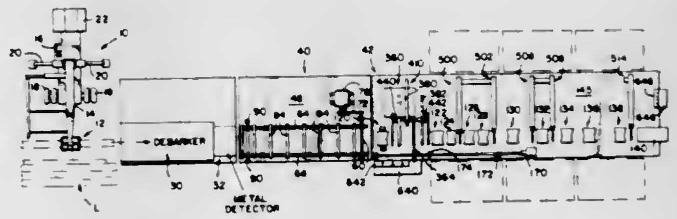
3,702,626
TIMBER MILL

Druid L. Mills, 96 Ella Taylor Rd., Yorktown, Va.

Continuation of Ser. No. 726,159, May 2, 1968, abandoned. This application Nov. 6, 1970, Ser. No. 87,639

Int. Cl. B27b *17/02*

U.S. Cl. 143—32 P **35 Claims**



An adjustable in-feed conveyor carries logs to a positioning feed means. A sawyer selects the desired log length and the positioning feed means moves the log to the proper position adjacent a saw. Clamping means disposed adjacent the saw is adapted to securely hold a log in place while it is being cut. The positioning feed means then moves the log away from the saw to an unloading station including spaced movable unloading portions adapted to engage logs and lift them off of the feed means and onto a truck and the like. The apparatus is mounted on a mobile trailer means.

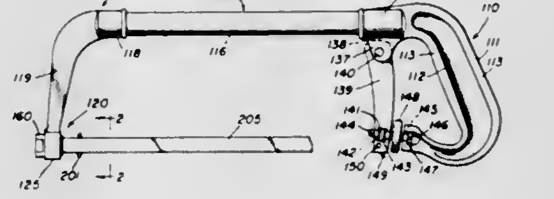
3,702,627
BLADE HOLDER

Raymond C. Dreier, 3450 N. Lakeshore Drive, Chicago, Ill.

Filed Jan. 11, 1971, Ser. No. 105,341

Int. Cl. B27b *21/06*

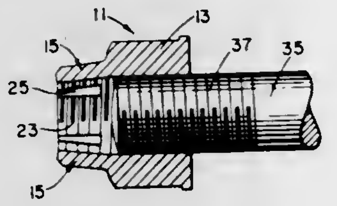
U.S. Cl. 145—33 A **15 Claims**



A blade holder for a handsaw construction including a saw frame having a handle at the rear end thereof and a leg at the front end thereof, a link pivotally mounted at one end thereof upon the frame spaced from the leg, means at the other end of the link for securing thereto the rear end of a saw blade, means for adjusting the space between the other end of the link and the leg, and a blade holder having two clamping members hingedly interconnected for clamping the front end of a saw blade, a retainer member mounted on the leg for engaging the clamping members to hold them in the clamping position thereof. One-piece and two-piece clamping members, rectangular and tapered clamping members and synthetic organic resin clamping members are disclosed. The clamping member may have mounted thereon a trapping member which in use extends through the retaining member to maintain association between the clamping members and the retaining member.

3,702,628
LOCK NUT MEMBER

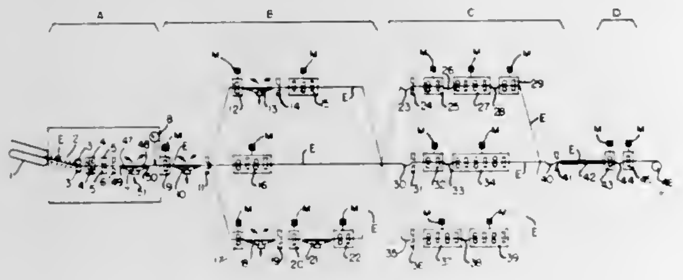
Frank J. Cosenza, Palos Verdes Pensiula, Calif., assignor to Tridair Industries, Redondo Beach, Calif.
Continuation of Ser. No. 696,367, Jan. 8, 1968, abandoned.
This application Nov. 27, 1970, Ser. No. 93,421
Int. Cl. F16b *39/286*
U.S. Cl. 151—21 B **1 Claim**



This disclosure describes a lock nut member including a body portion having an opening extending therethrough and a plurality of resilient locking segments joined to the body portion and extending generally axially thereof to define an extension of the opening. The interior surfaces of the locking segments are threaded to receive an externally threaded member. When the externally threaded member is received within the locking segments, the locking segments firmly grip the externally threaded member and are deflected radially outwardly. The locking segments are constructed so that they will deflect in a manner approaching the deflection of a flat beam.

3,702,629
METHOD FOR THE CONTINUOUS HOT SHAPING OF COPPER BARS

Jean L. Leroy, Hoboken, Belgium, assignor to Metallurgie Hoboken-Overpelt, Brussels, Belgium
Filed Aug. 11, 1970, Ser. No. 62,836
Claims priority, application Luxembourg, Aug. 25, 1969, 59345
Int. Cl. B22d *11/12*; **B21b** *39/08*
U.S. Cl. 164—76 **19 Claims**

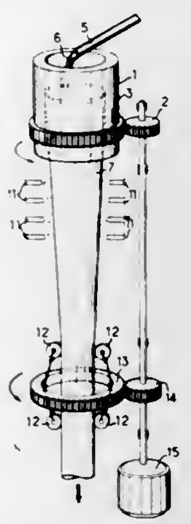


A process wherein, during the conveyance of copper bars from a continuous casting device to the point of evacuation of the bars in their final form, tensions are suppressed at various points during the conveyance, torsions are suppressed in the length of the bar, and cooling of the bar is controlled during the conveyance.

3,702,630
APPARATUS FOR CASTING SOLID CYLINDRICAL METALLIC OBJECTS

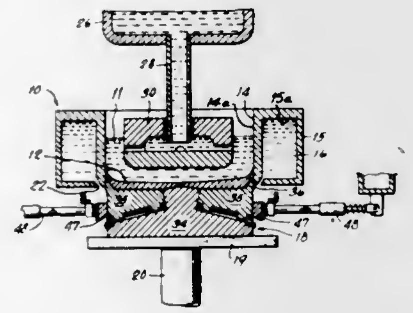
Pierre Peytavin, Aulnoye-Aymeries, and Louis Babel, Sauvigny-Les-Bois, both of France, assignors to Societe Civile dite De Centrifugation, Paris, France
Division of Ser. No. 710,427, Feb. 14, 1968, Pat. No. 3,583,469, which is a division of Ser. No. 483,210, Aug. 27, 1965, abandoned. This application Jan. 5, 1971, Ser. No. 104,091
Int. Cl. B22d *27/08*, *11/10*
U.S. Cl. 164—260 **7 Claims**

Apparatus for continuously casting solid round castings suitable for direct drawing into tubes comprises a rotating bottomless mold, means for pouring molten metal into said mold at a point eccentric to the axis of the mold, and means for continuously withdrawing the casting from the bottom of the mold. Means are provided for vertically reciprocating the mold as it rotates.



3,702,631
APPARATUS FOR CONTINUOUS CASTING OF METAL INGOTS

Felix Antoine Sergerie, Arvida, Quebec, Canada, assignor to Alcan Research and Development Limited, Montreal, Quebec, Canada
Filed March 22, 1971, Ser. No. 126,550
Int. Cl. B22d *11/08*
U.S. Cl. 164—274 **13 Claims**

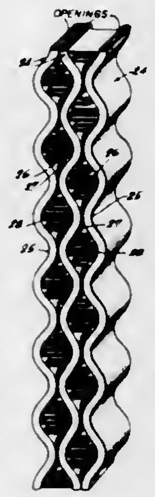


In continuous casting of metal ingots by delivering molten metal to an open-ended mold while withdrawing cast ingot continuously from the open mold end and while directing liquid coolant onto the ingot surface emerging from the mold, the extremity of the ingot is supported by a stool that initially closes the mold open end and moves progressively away from the mold as the ingot is cast. The stool is provided with one or more drainage passages which are closed while the stool is in its initial position but open as the stool moves away from the mold to release fluid that may accumulate between the ingot extremity and the stool. The passages are defined by sliding portions of the stool that initially are held in passage-closing position, but are released for movement to passage-opening position when the stool moves away from the mold.

3,702,632
HEAT EXCHANGER CORE

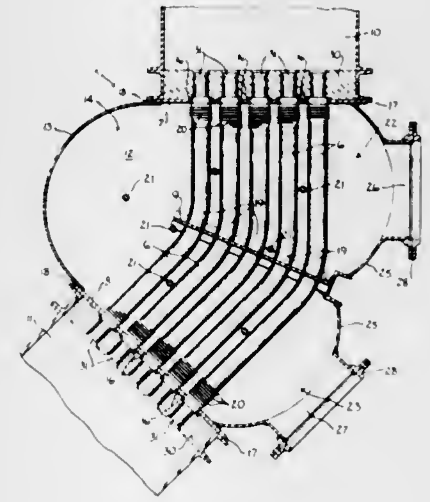
Frederick W. Grimshaw, 47 Ploch Road, Clifton, N.J.
Filed Aug. 14, 1970, Ser. No. 63,825
Int. Cl. F28f *1/22*
U.S. Cl. 165—152 **1 Claim**

An air-cooled radiator core is described comprising a plurality of welded or soldered-together core elements. Each core element is fabricated of an elongated seamless loop of flat metal formed along its length with 90 degree out of phase sinuous side portions outwardly flanged along each edge, the sinuous side portions being in mutual abutment at out of phase node portions. Adjacent core elements are fitted flange-edge to flange-edge to define a honeycomb effect of core openings for the passage of cooling air; and abutting flanges are soldered or welded together along their outer edges to provide sinuous coolant flow paths between mutually adjacent core elements. In a modified form of the invention flat ribbons of sheet metal are folded back and forth along their lengths in a modulated pattern of such shape along their lengths as to fit snugly within and along the honeycomb openings to increase radiating surface areas and thereby improve the efficiency of air cooling action of a radiator core.



3,702,633
GAS-TO-GAS HEAT EXCHANGER

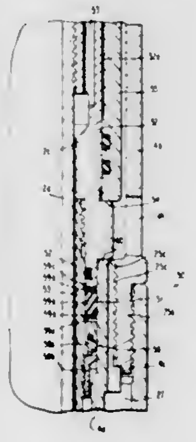
Denis G. Csathy, Minneapolis, Minn., assignor to RayGo, Inc., Minneapolis, Minn.
Filed Aug. 23, 1971, Ser. No. 173,820
Int. Cl. F28f *9/22*
U.S. Cl. 165—159 **4 Claims**



In a gas-to-gas heat exchanger, numerous tubes extend in parallel between a pair of tubesheets that are oblique to one another. Each tube is medially curved to have its end portions normal to the respective tubesheets to which they connect, all being curved in the same direction. The medial portions of the tubes extend through a baffle disposed to bisect the acute angle between the tubesheets. Side and end walls cooperate with the baffle and tubesheets to define two cooling air passage portions, at opposite sides of the baffle, and a third connecting them around the baffle.

3,702,634
RETRIEVABLE PACKER APPARATUS FOR USE IN A WELL BORE AND METHOD OF PROLONGING ITS OPERATING LIFE

Merlin F. Anderson, Duncan, Okla., and Lee E. Perkins, Houma, La., assignors to Halliburton Company, Duncan, Okla.
Division of Ser. No. 829,388, June 2, 1969, Pat. No. 3,548,684.
This application June 10, 1970, Ser. No. 57,030
Int. Cl. E21b *23/00*
U.S. Cl. 166—315 **2 Claims**



Retrievable packer apparatus for use in a well bore including an equalizing valve designed to release pressure in two stages. A ratchet mechanism prevents the relaxation of compressed packer elements until the complete release of upper slip segments has occurred. A floating sleeve, in conjunction with spaced abutments or stop means, provides a mechanism for radially collapsing slip expander blocks, and, if necessary, applying a lifting or impact force to upper slips to ensure their release.

A selectively releasable ball coupling provides a mechanism for applying longitudinal force through a series of telescopingly assembled components and selectively releasing the components for longitudinal movement relative to each other.

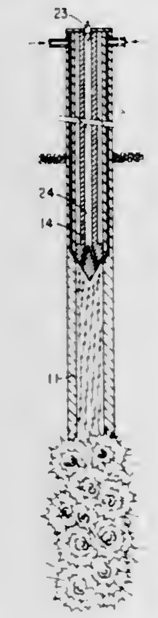
An equalizing valve carried by a packer mandrel is pressure balanced with respect to differential pressure acting beneath the set packer. Pressure acting beneath the set packer tends to augment the packer setting force.

A method of releasing an equalizing valve wherein the valve is released in two stages, the first stage involving the separation of a high pressure seal from a valve seat, and the second involving the subsequent release of a low pressure seal from the valve seat.

3,702,635
SEISMIC ENERGY SOURCE USING LIQUID EXPLOSIVE

John B. Farr, Tulsa, Okla., assignor to Amoco Production Company, Tulso, Okla.
Filed Nov. 10, 1970, Ser. No. 95,003
Int. Cl. E21b *43/76*, *47/00*
U.S. Cl. 166—299 **10 Claims**

This invention is a method of generating seismic waves, for example for use in seismic geophysical prospecting, which involves forcing liquid explosive below the surface of the earth through a conduit to form a localized accumulation in an unstable formation which may be water, marsh, loose soil, etc. The liquid explosive has sufficient body so that it disperses only slowly through the formation. After this accumulation is placed it is detonated from the earth's surface to produce seismic waves. Preferably the liquid explosive is formed in place from two or more components, each of which has very little tendency to detonate prior to mixture, and each of which is pumped down a separate conduit, which increases the safety of the procedure. The detonation is accomplished remotely by sudden application of pressure, for example by exploding a thin, substantially continuous column of the liquid explosive between the detonator and the localized accumulation, or by exploding a column of gas between detonator and accumulation. If the unstable earth formation contains a substantial amount of solids, such as in the case of marsh or loose earth, a rod-like solid member is forced down into the formation and then partly withdrawn to form a cavity which is filled with liquid explosive through conduits provided in this member.



The region around the local accumulation of liquid explosive can be treated in several ways to enhance transfer of seismic energy to the earth beyond the initial cavity, for example by permeating the formation around the cavity with a non-detonating liquid, e.g., water, up to a distance of several feet or by using a soil-conditioning liquid which after a short while tends to solidify and increase the acoustic impedance of the treated region.

3,702,636

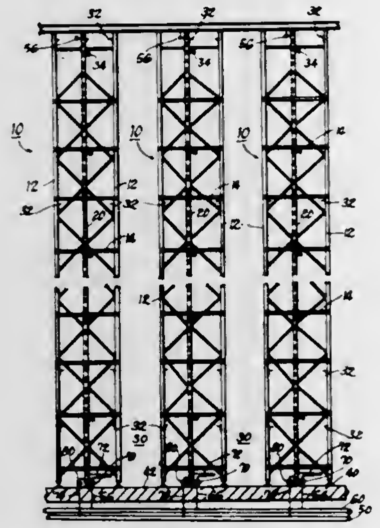
ANTIFREEZE SYSTEM FOR RACK SPRINKLER BUILDING

John M. Hart, Joiliet, Ill., assignor to Unarco Industries, Inc.

Filed May 13, 1971, Ser. No. 142,997

Int. Cl. A62c *3/00*

U.S. Cl. 169—2 R **8 Claims**



An article storage rack, having tubular rack-support means constructed to convey a pressurized fire-extinguishing liquid therethrough, is adapted for use in environments that may be subject to freezing temperatures by providing a heat exchange conduit which conveys a heated fluid, such as glycol or steam, within the tubular support means and thereby providing a heat medium in heat exchange relationship with any fire-extinguishing liquid in the tubular support means. The heated fluid flow prevents the fire-extinguishing liquid from freezing and damaging the tubular rack-support means.

3,702,637

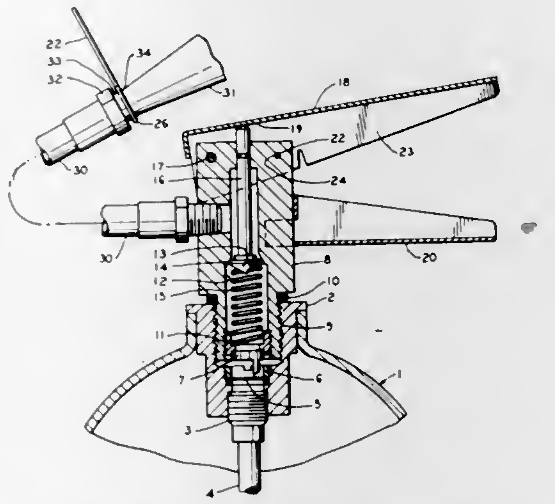
CONTROL VALVE AND DISCHARGE HOSE FOR PRESSURIZED FIRE EXTINGUISHERS

James C. Bower, 20113 Lorain Avenue, Fairview, Ohio

Filed Feb. 12, 1971, Ser. No. 114,936

Int. Cl. A62c *13/00*

U.S. Cl. 169—31 R **13 Claims**



A manually operable control valve, which discharges through a flexible hose, has a movable operating handle and a stationary hand grip which can be grasped in the hand of an operator and squeezed toward each other for opening the valve. A shear pin interlocks the handle and valve and is such that it can be readily sheared by squeezing the handle toward the hand grip under weak to moderate hand pressure. The shearing strength of the pin is specifically related to the physical strength of the operating handle so that the pin will shear under forces applied to the handle in the valve opening direction of insufficient intensity to damage the handle. An externally visible tell-tale fastener holds the pin in place but can readily be broken free from the pin by pulling the pin endwise.

The handle, pin, and fastener are of material such as to eliminate galvanic corrosion at their juxtaposed surfaces. The hose is held by a portion of the shear pin in a non-operative position, and that portion is cut free upon shearing the pin by operating the handle.

3,702,638

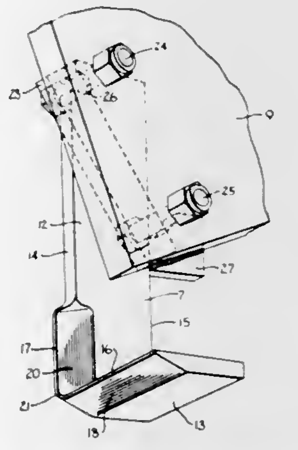
EARTH WORKING ROTOR WITH IMPROVED TINES

Harry H. Takata, Golden Valley, Minn., assignor to Raygo, Inc., Minneapolis, Minn.

Filed Jan. 18, 1971, Ser. No. 107,039

Int. Cl. A01b *33/10*

U.S. Cl. 172—540 **7 Claims**



Tines of an earth working rotor, detachably fixed to axially spaced disc-like tine carriers, are L-shaped, with flat shank and hoe portions. A sharp leading edge on the hoe is provided by a bevel on its surface remote from the shank, and on the shank by a bevel on its surface facing the hoe. A clamping

plate, secured by bolts threaded into the carrier, clamps the shank flatwise thereagainst. Work reaction force is taken by a pair of abutments on the carrier, one engaging the leading edge of the shank and the other, axially farther out, engaging its trailing edge.

3,702,639

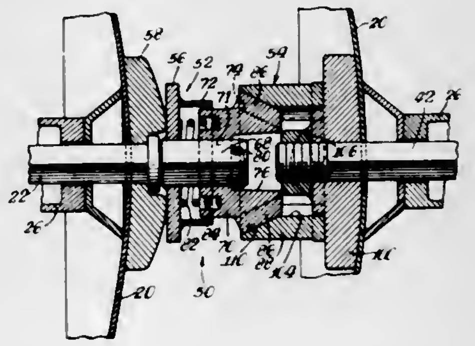
SPRING BIASED COUPLING MEMBER ON A DISK GANG FOR DRIVING ENGAGEMENT WITH A FOLDING WING GANG COUPLING MEMBER

George E. Womble, and Rex Cleveland, both of Kewanee, Ill., assignors to Kewanee Machinery & Conveyor Co., Kewanee, Ill.

Filed Sept. 11, 1970, Ser. No. 71,299

Int. Cl. A01b *21/08, 65/02;* **F16d** *11/00*

U.S. Cl. 172—568 **4 Claims**



A coupling for interconnecting a generally stationary main disk gang of a disk harrow and a wing gang movable to a position axially aligned with and establishing an extension of the main disk gang, the coupling including a first coupling member having radial drive lugs and supported by one of the cooperating pair of disk gangs for axial sliding, a second coupling member supported in axial relation on the other of the disk gangs and having recesses formed to receive the drive lugs in driving relation, and spring means operative with the first coupling member to allow the disk gangs to be brought into generally axial alignment and effect driving coupling therebetween without radial alignment of the driving lugs and receiving recesses therefor.

3,702,640

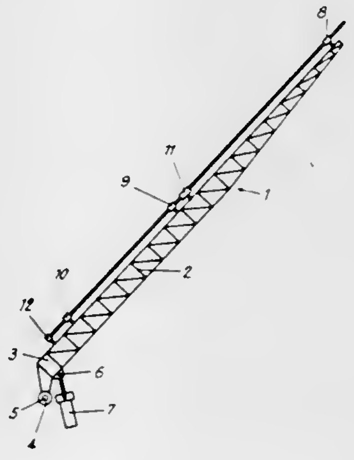
TIPPING GIRDER FOR THE TRANSFER OF RODS OR TUBULAR ELEMENTS

Bernard G. Cintract, Boulogne, and Rene G. Sevin, Garges-les-Gonesse, both of France, assignors to Compagnie Francaise Des Petroles, Paris, France

Filed April 13, 1970, Ser. No. 27,929

Int. Cl. E21b *19/00*

U.S. Cl. 175—85 **9 Claims**



A tipping girder for the transfer of rods or tubular elements, comprising a plurality of adjustable guide nippers movably mounted on the girder for movement transverse to the longitudinal axis thereof, and adjustable locking nippers movably mounted on the girder for movement parallel and transverse to the longitudinal axis thereof. The locking nippers are constructed to automatically engage and lock a rod on the girder when it is moved away from a horizontal position.

3,702,641

CONVEYING SYSTEM

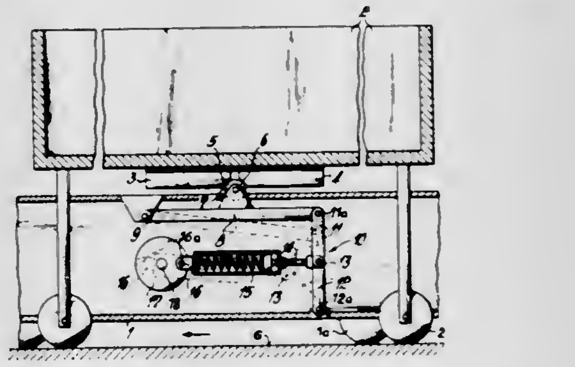
Gerhard Schnell, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 14, 1971, Ser. No. 106,324

Claims priority, application Germany, Feb. 3, 1970, P 20 04 689.3

Int. Cl. B60d *1/00*

U.S. Cl. 180—14 R **9 Claims**



A mobile load-carrying unit has ground-engaging wheels and a body which is supported upwardly spaced from the ground by these wheels. A self-propelled vehicle unit is also provided with wheels on which it can travel in a given path on the ground and is dimensioned to fit beneath the body of the load-carrying unit. Cooperative force-transmitting portions are provided on the two units and so act with one another as to exert downwardly directed pressure upon the vehicle unit when the latter is beneath the load-carrying unit and travels in its predetermined path, so that the conveying force exerted by the vehicle unit upon the load-carrying unit in a sense propelling the latter is in part converted into a component of force acting on the vehicle unit in direction toward the ground to increase frictional engagement of the wheels of the vehicle unit with the same.

3,702,642

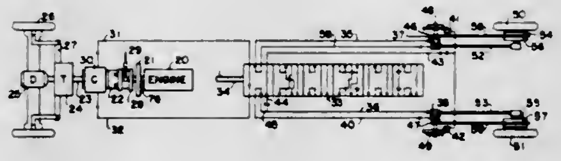
HYDRAULIC DRIVE FOR VEHICLES USING HYDRAULIC MOTORS

Clarence Kirk Greene, 1155 Woodside Road, Berkeley, Calif.

Filed Oct. 21, 1970, Ser. No. 82,561

Int. Cl. B62d *7/00*

U.S. Cl. 180—44 M **9 Claims**



The power input shaft of a differential pump (which has a pump output shaft, mechanical reacting means for driving the output shaft at a speed which is inverse to the quantity of fluid flowing through the pump outlet and inlet) is drivenly connected to the vehicle power plant; the pump output shaft is mechanically connected to drive one set, e.g., front, wheels; two or more positive-displacement hydraulic motors are connected to drive other, e.g., rear wheels individually; and duct and valve means are provided for interconnecting the motors either in series or in parallel with the pump inlet and outlet for varying the effective displacements of the motors. The valve means can have more than two positions: When two motors are used, three different effective displacements are achieved by connecting the motors (1) in parallel, (2) in series, (or in parallel with a change in gear ratio between each motor and its wheel); when four motors are used, two are connected to drive each wheel and the motors are connected (1) in parallel, (2) each pair of two in series with the two series-connected pairs in parallel, or (3) in series with the pump. The differential pump has a sleeve for interlocking the pump output shaft to the power input shaft, thereby stopping the pumping action. Additional positions of the valves (4) de-clutch the vehicle by interconnecting the pump outlet and inlet and (5) block flow from the pump outlet to cause equal speeds of the power input and pump output shafts.

3,702,643

MEANS FOR BOUNDING CUSHION SPACES OF GAS CUSHION VEHICLES

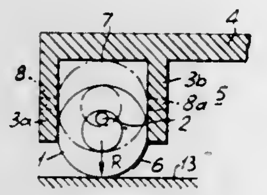
John James Spillman, Bedford, England, assignor to National Research Development Corporation, London, England

Filed March 30, 1970, Ser. No. 23,829

Claims priority, application Great Britain, April 2, 1969, 17,244/69

Int. Cl. B60v *1/00*

U.S. Cl. 180—127 **14 Claims**



The cushion of a gas cushion vehicle is contained by a wall structure comprising a horizontal row of rigid members of lamellar form, e.g., discs, mounted for independent vertical movement with respect to each other. The lower surfaces of the members are curved to define a convergent-divergent passage between them and the surface over which the vehicle is to operate, for the escape of gas from the cushion. The members are preferably enclosed in a downwardly open chamber, separate from the cushion space. In use, by suitably controlling the pressure above the members, e.g., in the chamber, the aerodynamic forces exerted on the members due to the flow of cushion gas beneath them, are arranged to maintain the members in an equilibrium position spaced above the surfaces over which the vehicle operates.

3,702,644

BLOW DOWN QUIETER

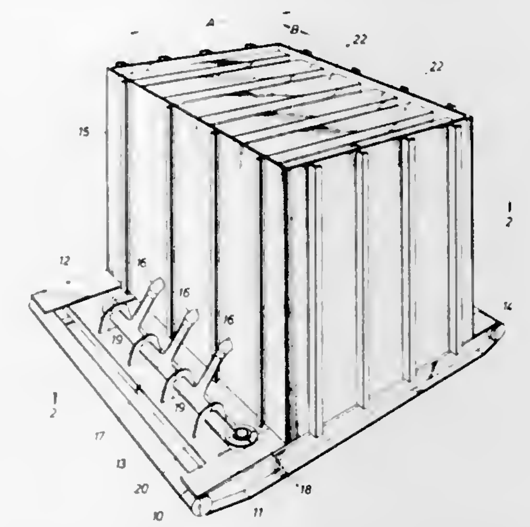
Neal V. Fowler, Jr., Arthur P. Gallagher, and Calvin L. Chance, Jr., Dallas, Tex., assignors to Vibration & Noise Engineering Corporation, Dallas, Tex.

Filed Sept. 10, 1971, Ser. No. 179,452

Int. Cl. F01n *1/10, 7/10*

U.S. Cl. 181—50 **10 Claims**

A skid mounted open-topped tank having manifold interconnected multiple perforated diffuser tubes positioed in the lower portion thereof is arranged for connection to a pressurized gas discharge passageway by an adjustable conduit. The upper portion of the tank is provided with a plurality of planar sound absorption panels vertically positioned to form a plurality of parallel discharge ducts. The sound absorption panels include a core of sound absorption material retained between two perforated stiffened backing sheets.



3,702,645

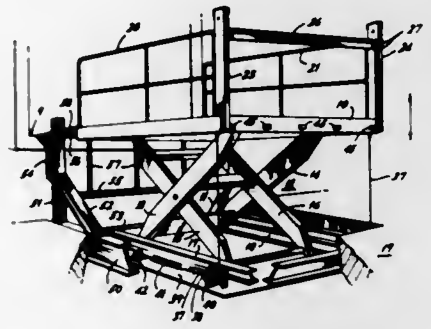
LOADING PLATFORM

Kenneth Shaw, Meadowbrook, Pa., assignor to Fred Hill & Son Company, Philadelphia, Pa.

Filed Sept. 18, 1970, Ser. No. 73,459

Int. Cl. B66b *11/04*

U.S. Cl. 187—18 **3 Claims**



A loading platform, which is adapted to be raised and lowered to facilitate the transfer of objects from one level to another, is provided with an automatically operable barrier which is raised and lowered in response to raising and lowering of the loading platform to provide protection for personnel when the platform is in its elevated position, while permitting free access to the platform in its lowered position. Also means are provided automatically responsive to the raising and lowering of the platform for positioning a ramp plate for bridging a gap between the platform and an adjacent surface to or from which objects are to be transferred.

3,702,646

SHOCK ABSORBER FOR FLUID SYSTEMS

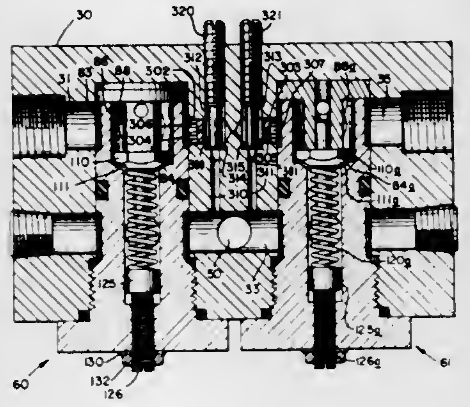
Philip C. Sherburne, 260 W. Exchange St., East Providence, R.I. 02903

Continuation-in-part of application Ser. No. 22,615, Mar. 25, 1970. This application Oct. 16, 1970, Ser. No. 81,295

Int. Cl. F16f *9/19, 9/34*

U.S. Cl. 188—280 **9 Claims**

A shock absorber for a fluid handling system, such as a steam piping system, in which a cylinder and piston assembly are connected between the fluid handling system and a fixed structure. A fluid conduit system provides communication between portions of the cylinder on opposite sides of the piston. An improved snubber valve controls flow through the fluid conduit system. The snubber valve has opposed check valves which are resiliently and adjustably biased to an open position to permit fluid flow through the conduit system during periods of normal rates of movement of the steam piping system relative to the fixed structure. Greater than normal movement, such as produced by shock conditions, causes fluid to flow through the snubber valve at a rate which closes one or the other check valves depending on the direction of fluid flow to stop further fluid flow through the conduit system. The check valves have frusto-conical seating surfaces. An adjustable orifice provides controlled leakage around both check valves, and in a modification, separate adjustable orifices provide controlled leakage around each check valve.



3,702,647

FREQUENCY SENSITIVE SUSPENSION SYSTEM FLUID DAMPER

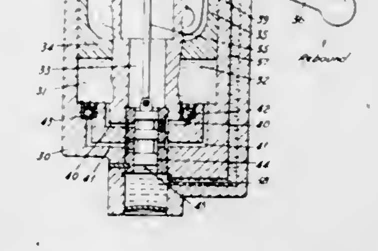
Raymond M. Richardson, 91 Norsey View Drive, Billericay, England

Filed Oct. 5, 1970, Ser. No. 77,777

Claims priority, application Great Britain, Jan. 6, 1970, 550/70

Int. Cl. F16d *57/00*

U.S. Cl. 188—283 **2 Claims**



A frequency sensitive fluid damper for a vehicle suspension system is described. The damper responds to relatively high frequency wheel movements with a relatively low degree of damping and to relatively low frequency body movements with a higher degree of damping. The damper may include a housing having a pair of cylinders with movable pistons simultaneously actuated by a lever arm attached to the wheel carriers. The cylinders are fluidly connected to a valve having a spool which responds to low frequency movements, but which does not follow high frequency movements. Change in the valve spool position changes the amount of restriction to fluid flow from one cylinder to the other. The amount of restriction determines the degree of damping. Motion is transmitted to the valve spool through resilient means linked to the lever arm. The valve body may be made movable within the housing to adjust for variations in vehicle loading.

3,702,648

BRAKE RELEASE REVERSING TRANSMISSION CLUTCHES

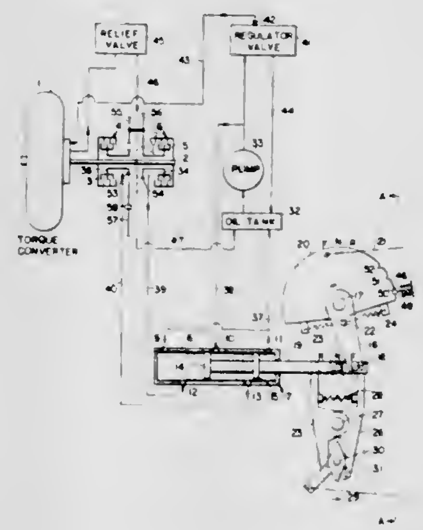
Takami Mori, Yokosuka, Japan, assignor to Okamura Manufacturing Company, Limited, Yokohama, Japan

Filed Sept. 19, 1969, Ser. No. 859,460

Claims priority, application Japan, Oct. 14, 1968, 43/74,144

Int. Cl. F16d *67/04;* **B60k** *29/02*

U.S. Cl. 192—4 C **2 Claims**



A power intercepting and low-speed rotating mechanism having a transmission with fluid activated first and second clutch means and a brake means and having a selector valve for supplying fluid under pressure either to the first or second clutch means to effect actuation thereof. The selector valve is manually operated to position the valve for establishing forward or rearward drive on the output shaft of the transmission. The manual means for operating the selector valve is spring-loaded and mechanically connected with the brake system. When the brake is effected, the selector valve is shifted towards a neutral position irrespective of the selected position thereof so that the clutch means may be entirely or partly declutched. Upon release of the brake, the selector valve returns, by force of the spring, to its selected position to recover the drive forwardly or rearwardly.

3,702,649

ONE-WAY CLUTCH HAVING TILTABLE SPRAGS

Emil Giese, Ruprecht Maurer, and Karlheinz Timtner, Bad Homburg, vor der Hohe, Germany, assignors to Ringspann Albrecht Maurer K.G., Bad Homburg vor der Hohe, Germany

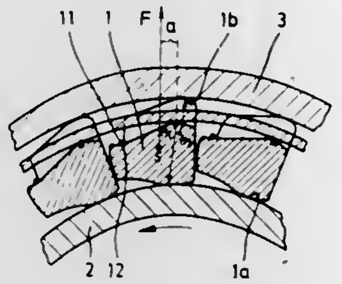
Filed Dec. 22, 1970, Ser. No. 100,725

Claims priority, application Germany, Jan. 31, 1970, P 20 04 457.9

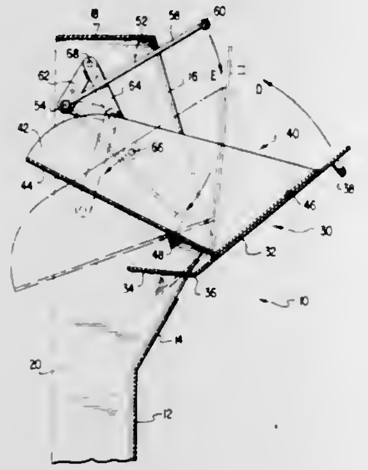
Int. Cl. F16d *41/07, 43/24*

U.S. Cl. 192—41 A **12 Claims**

Between the two races of a one-way clutch are tiltable sprags mounted so as to be rotatable in synchronism with the inner race. The sprags are provided with edges or studs which serve as tilting bearings by means of which the sprags abut against the inner surface of at least one supporting ring. The ring rotates also synchronously with the inner race and the sprags are arranged on the ring in such a manner that the centrifugal force during rotation tilts the sprags so that the surface portion in contact with the outer race is lifted therefrom, thereby uncoupling the clutch.



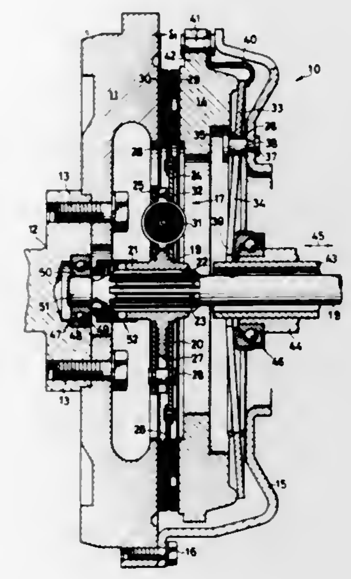
3,702,650
FEEDING UNIT
**John A. Boyd, 3314 Holloman Road,
Falls Church, Va. 22042**
Filed Jan. 22, 1971, Ser. No. 108,767
Int. Cl. B65g *11/16*
U.S. Cl. 193—34 **6 Claims**



A feeding unit includes a casing having an opening through which material is to be fed. A door covers the opening and a chute is attached to the inside of the door. A discharge assisting means is swingably disposed in the casing and is connected by linkage to the chute so that when the door is pulled open the discharge assisting means swings out of the way to permit chute loading. When the door is then closed, the discharge assisting means swings across the chute to assist in discharging materials therefrom.

3,702,651
CLUTCH RELEASING DEVICE
Saburo Fujita, Anjo, Hiroshi Ban, Toyota, and Yukiro Takikawa, Nagoya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Oct. 22, 1970, Ser. No. 83,035
Claims priority, application Japan, Oct. 25, 1969, 44/101,399
Int. Cl. F16d *13/75*
U.S. Cl. 192—70.25 **7 Claims**

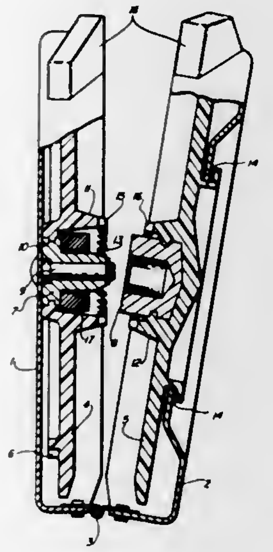
A clutch releasing device for a clutch assembly comprising a spring normally urging the clutch disc in the clutch releasing direction, and stopper means for limiting the movement of the clutch disc whereby the clutch disc assembly is rapidly and completely released from the driving members when the clutch is released.



ERRATUM

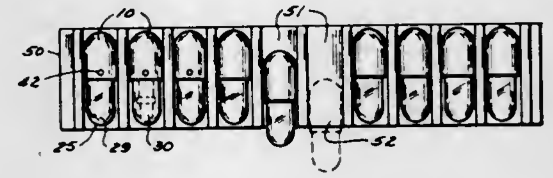
For Class 193—34 see:
Patent No. 3,702,650

3,702,652
DEVICE TO CAST OFF WOUND RIBBON FROM A SPOOL
Hans-Georg Hengelhaupt, Nuremberg, and Friedrich Teichmann, Feucht, Germany, assignors to Triumph Werke Nuernberg A.G., Nuremberg, Germany
Filed Nov. 9, 1970, Ser. No. 87,960
Claims priority, application Germany, Dec. 31, 1969, P 19 65 751.3
Int. Cl. B41j *33/14;* **B65h** *75/18*
U.S. Cl. 197—151 **10 Claims**



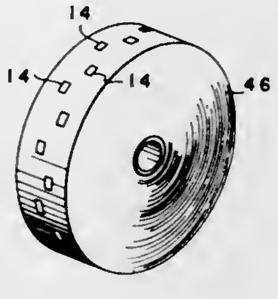
A ribbon spool that has two axially separable ribbon spool components, each with a spool hub portion facing the other, has a manipulative device associated therewith whereby the ribbon spool components are movable from joined to separated relations for discharging used, wound-up ribbon from between the spool hub portions. The device is normally in a spool-locating position on a typewriter and is removable therefrom and manipulative for casting off wound, used ribbon from the spool.

3,702,653
PACKAGE MEANS
Ralph E. Mottin, Grosse Pointe Park, and Anthony L. Oldani, St. Clair Shores, Mich., assignors to Parke, Davis & Company, Detroit, Mich.
Filed Sept. 14, 1970, Ser. No. 71,851
Int. Cl. B65d *83/04, 85/62*
U.S. Cl. 206—42 **9 Claims**



A package for pharmaceuticals and the like is provided in unit dose form comprising a hard shell gelatin container or joined capsule, preferably joined in locking engagement, and containing a pharmaceutical in a solid form such as a capsule, tablet or pill. The pharmaceutical form and the capsule container are each labelled to identify the medication. The package is tamper-proof and in a preferred form is assembled in cartridge form for machine dispensing or remote dispensing at the bedside.

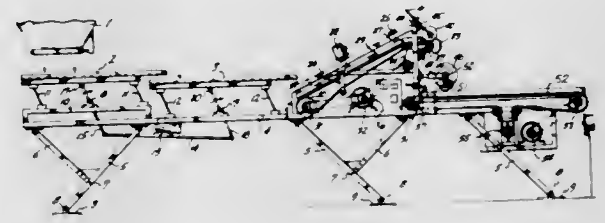
3,702,654
PULL TAB PAPER
William O. Young, Jr., Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed Jan. 7, 1971, Ser. No. 104,645
Int. Cl. B65d *85/00, 85/67, 85/80*
U.S. Cl. 206—59 F **2 Claims**



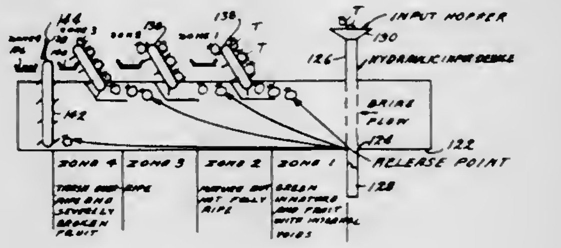
A roll of packaging material which has openings therein which are covered by a pull tab for access to the interior of the package formed from the packaging material. The adjacent pull tabs on the roll of packaging material are staggered in relation to one another so that the packaging material when rolled up has stability and the proper density for maximum packaging efficiency.

3,702,655
STICK-CLASSIFYING METHOD AND APPARATUS
**James P. Cox, 290 N. Howard, Burnaby,
British Columbia, Canada**
Continuation-in-part of application Ser. No. 14,159, Feb. 25, 1970. This application Jan. 18, 1971, Ser. No. 107,178
Int. Cl. B07c *5/04*
U.S. Cl. 209—80 **15 Claims**

Falling of successive sticks which are nonuniform lengthwise is controlled initially by launching each stick by an end in a generally horizontal direction and/or by engagement of the stick during its fall with a barrier causing the stick to swing, so that following the fall the sticks are oriented with the butts and the tips of virtually all of the sticks in corresponding relationship, irrespective of the initial butt and tip orientation of the sticks. An asparagus shoot, for example, is launched generally horizontally endwise such as by cooperating rotative pinching members, such as an upper roller and a lower belt, gripping an end portion. A shoot launched butt first will droop much more than a shoot launched tip first. During its fall a shoot launched tip first may engage a barrier roller nearer its tip to swing its butt down. A discharge conveyor removes the shoots butt first.



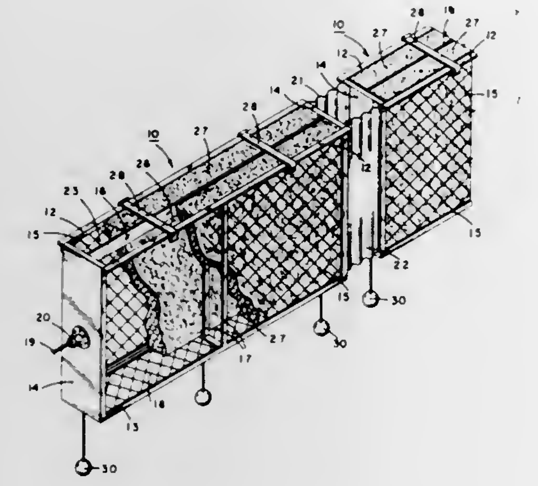
3,702,656
HYDRODYNAMIC MASS SORTING OF FRUITS INTO CLASSES ACCORDING TO SPECIFIC GRAVITY
Robert P. Gutterman, Bethesda, Md., and Le Baron H. Washington, Annandale, Va., assignors to General Kinetics, Inc., South Reston, Va.
Filed June 10, 1970, Ser. No. 45,195
Int. Cl. B03b *11/00*
U.S. Cl. 209—156 **20 Claims**



Fruits of mixed maturity are released, from below the upper surface, into a moving stream of flotation liquid. Baffle screens transversely separate the flotation liquid upper surface into collection areas downstream of the fruit release point. The fruits, upon rising in relation to their specific gravity, are trapped within the collection areas. In each collection area, the trapped fruits are hauled off by collection devices, each preferably capable of accepting all of the fruit being released into the flotation liquid, should all of the fruit enter one collection area.

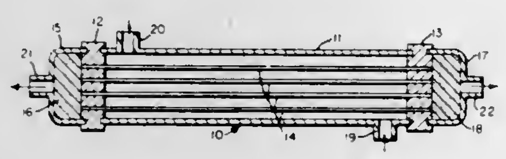
3,702,657
POLLUTION CONTAINMENT BARRIER
Gerald Robert Cunningham, Santa Monica, Calif., and Lemuel Dale Woody, Jr., Houston, Tex., assignors to Esso Production Research Company
Filed Feb. 11, 1971, Ser. No. 114,553
Int. Cl. E02b *15/04*
U.S. Cl. 210—242 **3 Claims**

A flow-through pollution containment barrier for the control and removal of potential oil spill hazards in a water environment includes a series of cages linked together. Oil sorbent buoyant material, capable of allowing water to pass freely through it while remaining oil wet when contacted by an oil water mixture is removably arranged in each cage. Liquid impervious material is arranged in the spaces at the joints between the cages to prevent passage of liquid therethrough. Each cage is weighted in order to maintain a predetermined submergence of the cage in a body of water.



3,702,658
PERMEATION SEPARATION APPARATUS

James Francis McNamara, Wilmington, and Richard Ellis Turner, Newark, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of application Ser. No. 883,791, Dec. 10, 1969. This application Feb. 24, 1971, Ser. No. 118,341
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **19 Claims**

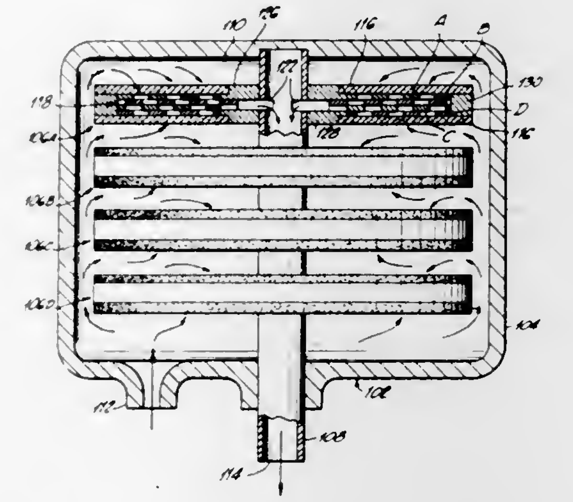


Permeation separation apparatus incorporating selectively permeable capallaries positioned by polymeric cast wall member(s) or capillary-sheet(s), said capillaries being open at the wall member(s) or capillary sheet(s), for use in separatory procedures wherein a pressure differential is applied across the capillary sheets, such as in reverse osmosis. Dimensional and relative positional changes as are involved in creep and plastic deformation of the capillary sheets and as are occasioned after extended periods of use are avoided by the improved feature of an inert porous, non-compressible material, such as epoxy resin bonded sand, being provided adjacent to the lower pressure face of a capillary sheet in a manner to transmit the pressure differential to the apparatus.

3,702,659
FILTER CORES

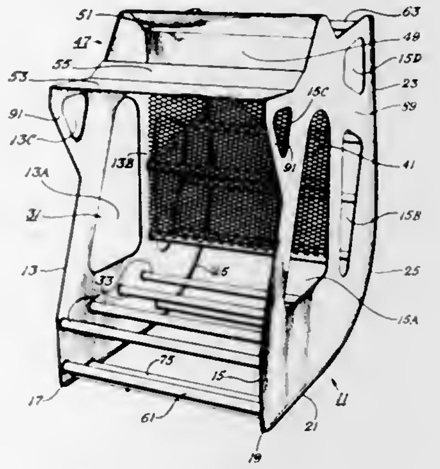
Raymond C. Clark, Orange, Conn., assignor to Brunswick Corporation, Chicago, Ill.
Filed Nov. 26, 1969, Ser. No. 880,108
Int. Cl. B01d *29/34, 25/26*
U.S. Cl. 210—343 **11 Claims**

The present invention relates to filters, for example, disc type filters useful in the production of polymers. More particularly, it relates to disc type filter cores which serve at least two functions; (1) adding support to the filter media, and (2) providing continuous filtrate flow passages during the filtering process attendant to such production. Each filter core comprises at least two discs in face-to-face relation, at least one of the discs having elongated apertures therein and at least one other disc having at least one elongated filtrate conduit means therein. The apertures and the filtrate conduit means cooperatively form a continuous fluid passage such that, for example, for a given filtrate flow velocity, filter media support may be maximized.



3,702,660
APPARATUS FOR HANDLING A CONTAINER OF PARTS

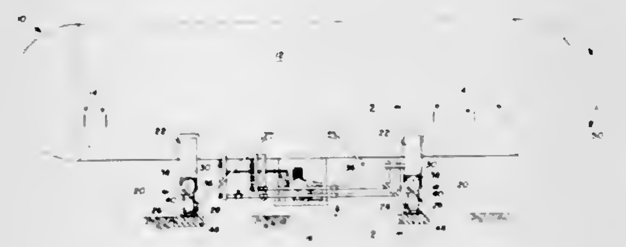
William L. Berger, 2 Sweetbrush, Texarkana, Tex. 75501
Filed Sept. 3, 1971, Ser. No. 177,739
Int. Cl. B65g *7/00*
U.S. Cl. 214—1 QE **7 Claims**



The specification discloses an apparatus for handling a container of parts and comprises two sides having supporting edges adapted to rock or turn on the floor or other working surface from one stable position to another, one position being a loading position and the other position being a working position. The supporting edges each have two supporting surfaces in planes slightly less than 90° with respect to each other which define the loading and working positions respectively. These surfaces are joined by a curved surface about which the apparatus can turn or rock from one stable position to the other. A receiving zone or section is provided for movement with the supporting sides for receiving a container adapted to hold parts when in an upright position, and to allow parts to move through an opening in the container when the container is rotated to the working position. In the working position the container is supported in an inclined position with its open end lower than its bottom end, whereby parts from the container may move through the opening by the force of gravity. A receiving bin is carried by the apparatus and located to receive parts from the container which flow through its opening when the apparatus is rotated to its working position.

3,702,661
STORAGE TANK ASSEMBLY AND METHOD OF INSTALLING IT

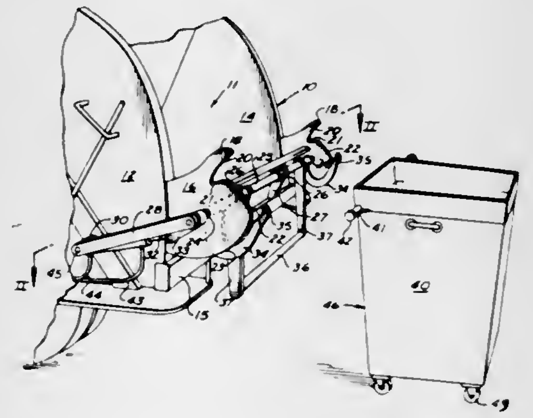
Van H. Berry, Jr., Dallas, Tex., assignor to Trinity Industries, Incorporated, Dallas, Tex.
Filed Mar. 6, 1970, Ser. No. 17,210
Int. Cl. B60p *1/64*
U.S. Cl. 214—152 **1 Claim**



A storage tank assembly includes a product receiving and storing tank and a pair of tank supporting assemblies each comprising a pair of tank raising and lowering jacks and a jack operating mechanism. The storage tank assembly is preferably installed at a distribution plant by operating the jacks of the tank supporting assemblies to raise the tank, positioning a tractor and a pole trailer under the tank, operating the jacks to lower the tank onto the tractor and the pole trailer and operating the tractor to transport the assembly to the distribution plant. At the plant, the jacks are operated to raise the tank off of the tractor and the pole trailer, the tractor and the pole trailer are removed and the jacks are operated to lower and level the tank.

3,702,662
LIFT AND DUMP APPARATUS

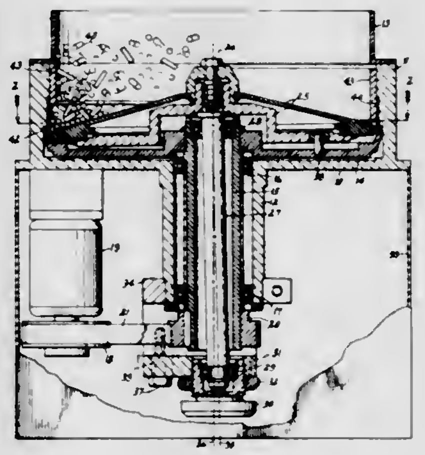
Felix K. Davieau, 425 San Pablo St., Fairfield, Calif. 94533
Filed Sept. 30, 1971, Ser. No. 185,295
Int. Cl. B65f *3/02*
U.S. Cl. 214—302 **4 Claims**



A lift and dump means for rear end opening collectors wherein fixed identical cam plates are secured rearwardly at either side of the collector in a vertical plane, the cam plates being formed with an upstanding finger immediately adjacent a short inwardly cut throat. A transverse rotating shaft journalled in said cam plates rotated by any suitable means from the side only; a pair of depending arms rigidly connected at their lower extremities with a rigid transverse rod which are all mounted as a unit on and for rotation with said shaft. A pair of hook members also mounted on and for rotation with said shaft at either side and in juxtaposition with said cams, said hooks adapted to engage horizontal extensions on a refuse container, guiding them over the cam surfaces and locking them in the said throat during dumping.

3,702,663
HOPPER FEED DEVICE

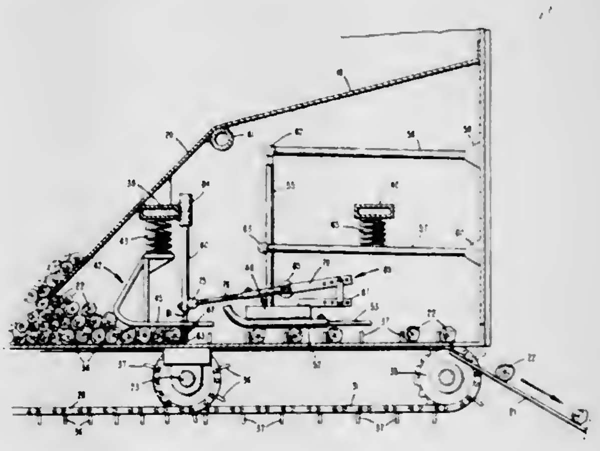
Hector Joele, Vlaardingen, Netherlands, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed July 6, 1971, Ser. No. 159,679
Claims priority, application Netherlands, July 16, 1970, 7010553
Int. Cl. B23q *7/12;* **B65h** *9/00*
U.S. Cl. 221—167 **5 Claims**



A centrifugal hopper feed mechanism having a drum formed in two sections, namely an upper stationary section and a lower rotary section, and a rotary disc in the bottom of the hopper which turns in the same direction as the lower rotary section whereby the tangential frictional force on the article produced by the lower section will augment the thrust force supplied thereto by the rotary disc and hence enable the rate at which articles are delivered from the hopper to be increased.

3,702,664
SUGARCANE PLANTING MACHINE

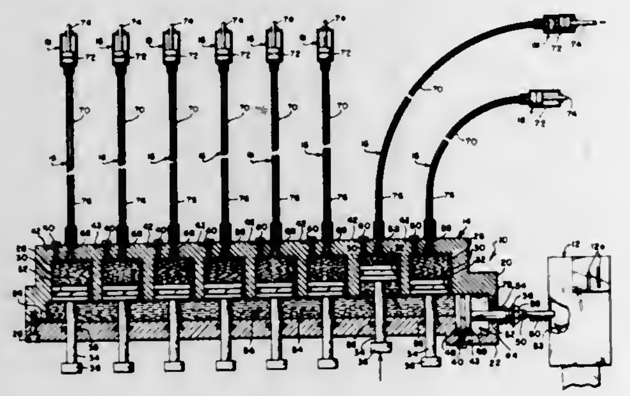
Morris Clement, P.O. Box 31, Charenton, La. 70523
Filed Sept. 10, 1971, Ser. No. 179,470
Int. Cl. A01c *7/00*
U.S. Cl. 221—185 **10 Claims**



The present disclosure concerns an improved device for planting sugarcane stalks, and like elongated planting material, which is dropped singly or in small bundles in an end-to-end configuration. A mobile unit having a storage hopper is provided with first and second consecutive driving chains arranged to drive the cane under first and second guides. A gate is arranged between the guides and operated by the second guide so that the gate is closed when cane is present under the second guide thus allowing only predetermined amounts of cane to be dispensed by the second driving chain.

3,702,665
COIN CONTROLLED VENDING APPARATUS WITH HYDRAULIC ACTUATING SYSTEM

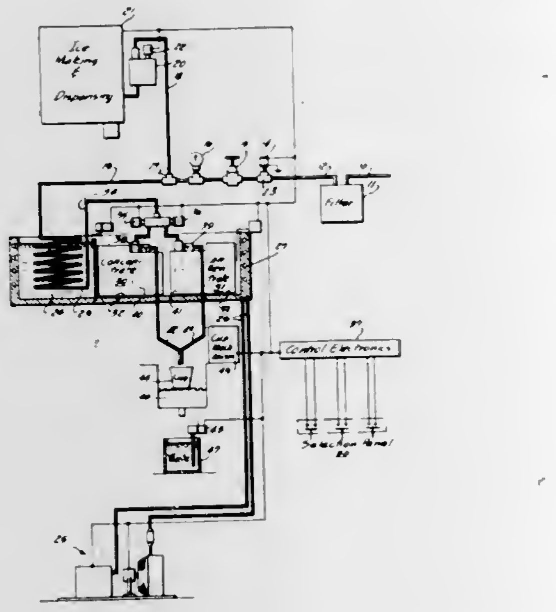
Don E. Rainey, 456 S. Dixie Highway,
East Pompano Beach, Fla. 33060
Filed Apr. 15, 1969, Ser. No. 816,276
Int. Cl. B65g *59/06*
U.S. Cl. 221—301 **4 Claims**



Coin controlled article vending apparatus which features a hydraulic system to release a selected article from stacked horizontal position for dispensing.

3,702,666
VENDING MACHINE

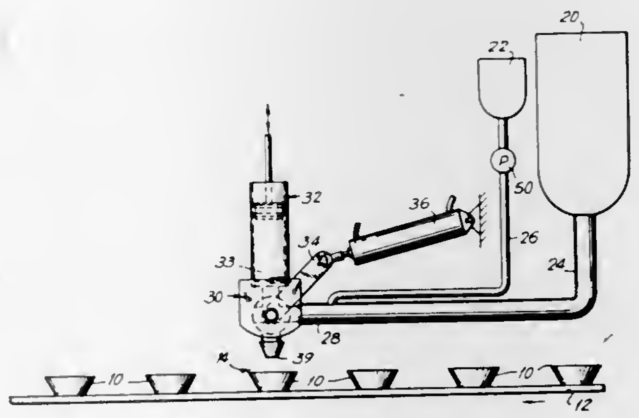
Eugene A. Stano, Orlando, Fla., assignor to Florida Juice Vendors, Inc., Orlando, Fla.
Continuation of abandoned application Ser. No. 800,517, Feb. 19, 1969. This application Apr. 7, 1971, Ser. No. 132,080
Int. Cl. B67d *5/56*
U.S. Cl. 222—129.4 **4 Claims**



A vending apparatus and method, especially adapted for use with concentrated ingredients such as concentrated orange juice, grapefruit juice or apple juice, uses ordinary tap water at regulated pressures and temperatures. Mixing valves operate by the flow of tap water mixing concentrated ingredients in predetermined proportions with the water and which valves are operated by solenoids, or the like, for predetermined time cycles, where cycles vary in accordance with the selections made on a selection panel following the insertion of a coin into the machine.

3,702,667
MIXING DISPENSER HAVING COMMON FEED LINE

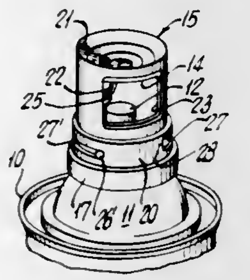
Joseph E. Pierce, Allentown, Pa., assignor to AEI Corporation, Bethlehem, Pa.
Filed Jan. 12, 1971, Ser. No. 105,841
Int. Cl. B67d *5/60*
U.S. Cl. 222—145 **6 Claims**



A machine for metering and mixing together two fluids and then dispensing the mixture. A feed line, with two input branches for receiving the two liquids to be mixed, is connected to an input terminal of a three terminal, two position valve. A suction pump is connected to a second terminal of the valve, and when said valve is in a first position draws into the pump the fluids from the feed line. The pump dispenses said drawn liquid through a third or output terminal of the valve when said valve is in its second position. Preferably, a positive displacement pump may be included in one of said branches of the feed line for applying a predetermined amount of one fluid to the feed line.

3,702,668
SAFETY DEVICE FOR AN AEROSOL OR THE LIKE DISPENSING CONTAINER

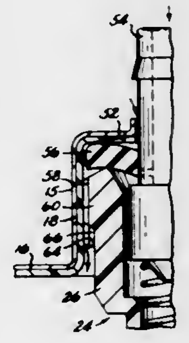
William James Landen, Cheshire, Conn., assignor to Eylet Specialty Company, Wallingford, Conn.
Filed Nov. 16, 1971, Ser. No. 199,256
Int. Cl. B65d *55/02*
U.S. Cl. 222—182 **14 Claims**



The invention contemplates simple means for safety closure of a dispensing container, such as an aerosol or other liquid dispenser, for particular use in protecting the container against access by young children. The device utilizes two concentric tubular or cup-shaped parts with window openings which register for one angular position and which do not register for another angular position, and interengaging means between these parts requires a correct sequence of two deliberate and different actuations, before the device will allow a dispensing actuation. In the form described, the safety device may be a unit-handling assembly of the two parts, said assembly being thereafter assembled to a standard aerosol container.

3,702,669
AEROSOL CONTAINER

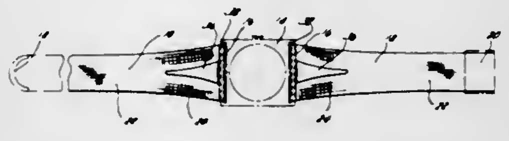
Ronald F. Ewald, 2700 Cardinal Drive, Rolling Meadows, Ill. 60008
Continuation-in-part of application Ser. No. 724,010, Apr. 28, 1968. This application Feb. 5, 1970, Ser. No. 8,847
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.16 **2 Claims**



An aerosol container with an inner auxiliary plastic container internal to the customary metal can. A preformed plastic disc contoured to fit against the inside of the usual mounting cup of the valve is crimped into the valve opening of the can to isolate all metal surfaces from the product within the container. The disc may be used decoratively or may have an annular inner groove to provide a safety release for excess pressure or be provided with an inner annular protrusion to hold a container of product separate from the propellant within the can.

3,702,670
MESH BRACELET FOR WRIST WATCH BAND

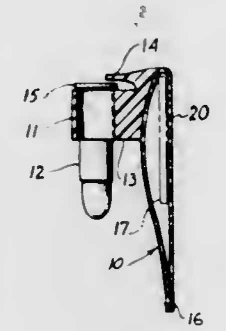
Walter Luft, Forest Hills, N.Y., assignor to Jacoby-Bender, Incorporated, Woodside, N.Y.
Filed Feb. 19, 1971, Ser. No. 116,973
Int. Cl. A44c *5/00*
U.S. Cl. 224—4 D **20 Claims**



A mesh bracelet for a wrist watch band or the like, the mesh bracelet composed of longitudinally parallel mesh strands, fashioned to impart thereto at an end section thereof a lateral spreading of the mesh strands within the area of said end section, to increase the lateral size and/or the configuration of said end section; and the combination therewith of an ornamental plate covering the spread mesh strands at said end section.

3,702,671
CARTRIDGE HOLDER

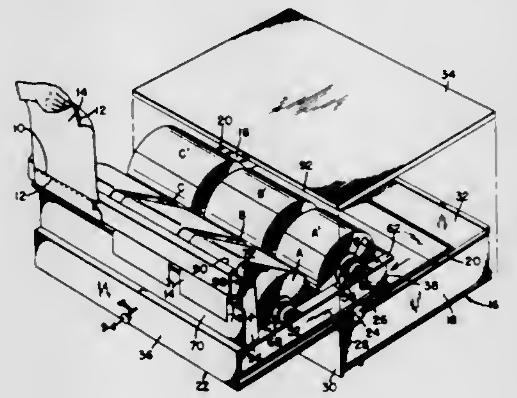
James Cirillo, 969 E. 83rd St., Brooklyn, N.Y. 11236
Filed Dec. 1, 1970, Ser. No. 94,058
Int. Cl. F42b *39/00*
U.S. Cl. 224—20 **2 Claims**



A cartridge holder particularly suitable for attachment to a belt clip and the like having a plurality of loops for receiving cartridges, whereby the loops are spaced apart from the belt loop to make the cartridges more easily accessible to the user. A flexible retaining ledge also overhangs the end of each cartridge so as to prevent their accidental removal while permitting them to be easily removed by the user.

3,702,672
PLASTIC BAG DISPENSER

Raymond F. Becht, 61 Stillmeadows Drive, Cincinnati, Ohio 45245
Filed May 27, 1971, Ser. No. 147,333
Int. Cl. B26f *3/02*
U.S. Cl. 225—106 **18 Claims**

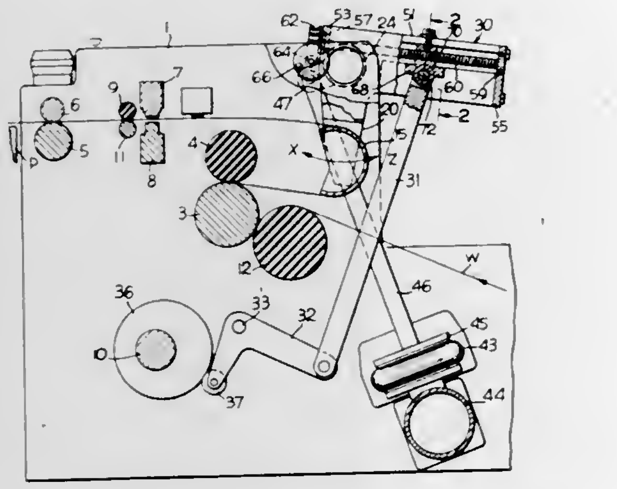


The device dispenses plastic bags in succession by severance from rolls of plastic bag material, without the use of cutters or blades. The bags are defined initially by transverse welds and lines of perforations applied to a tubular strip wound upon a core, and are detachable in quick succession with the aid of frictional restrainers automatically operative incident to payout of material from the supply roll.

3,702,673
WEB-HANDLING MECHANISM FOR CONTROLLING WEB SPEED

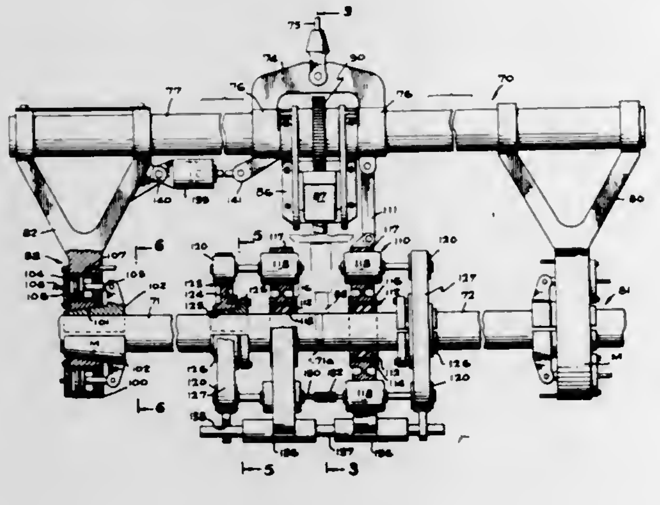
Peter Zernov, Wauwatosa, and Gilbert S. Woythal, Milwaukee, Wis., assignors to Zerand Corporation, New Berlin, Wis.
Filed Sept. 13, 1971, Ser. No. 179,796
Int. Cl. B65h *17/44*
U.S. Cl. 226—4 **19 Claims**

Web-handling apparatus for feeding a web to a carton-forming press or the like and in which the web is continuously fed by metering rolls after passing through the metering rolls, the web is intermittently stopped prior to its entry into the press by disengagement of the feed rolls or by a brake bar. Means such as a curved plate are movable with the web to maintain constant contact therewith to prevent slapping action of the web as it is taken up by the feed rolls when the latter are engaged and control acceleration and deceleration of the web. Instead of stopping the web with a conventional brake bar, movement of the curved plate is programmed to take up the web as fast as the metering rolls meter the web to the feed rolls.



3,702,674
APPARATUS FOR ACCOMPLISHING SONIC FUSION WELDING AND THE LIKE INVOLVING VARIABLE IMPEDANCE LOAD FACTORS

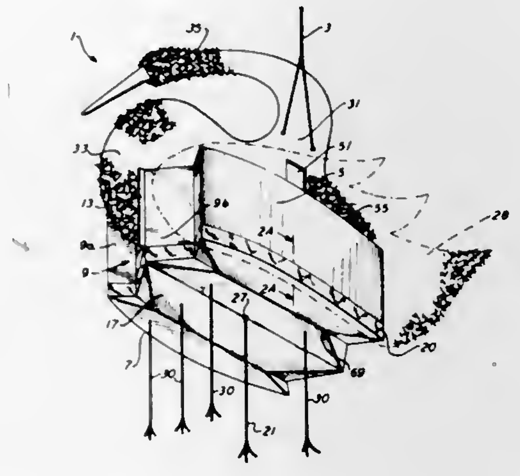
Albert G. Bodine, 7877 Woodley Ave.,
Van Nuys, Calif. 91406
Application Mar. 6, 1969, Ser. No. 804,798, which is a division of application Ser. No. 537,163, Mar. 24, 1966, now Patent No. 3,439,409. Divided and this application Dec. 3, 1970, Ser. No. 94,883
Int. Cl. B23k *1/06, 5/20*
U.S. Cl. 228—1 **6 Claims**



Parts to be welded together are supported with the surfaces to be joined in contact with one another. A resonator member is coupled to at least one of the parts and an orbiting mass oscillator is connected to said resonator member. The orbiting mass oscillator is driven at a frequency such as to cause resonant elastic vibration of the associated resonator member slightly below the peak resonant frequency. The sonic energy is transmitted to the surfaces to be joined, generating heat at such surfaces thereby fusing the parts together.

3,702,675
DECORATIVE PARTY DEVICE

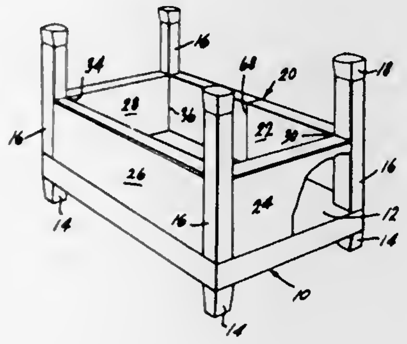
Ricardo Bajo, 325 11th St., Union City, N.J. 07087
Filed June 9, 1971, Ser. No. 151,467
Int. Cl. B65d *5/36, 5/72*
U.S. Cl. 229—7 R **12 Claims**



A collapsible and reusable pinata for use at parties and similar festive occasions. The pinata includes a pair of flexible lateral panels, front and rear accordion pleated panels extending between the lateral panels, and a frangible bottom piece which in cooperation with the panels defines a receptacle for the candy, toys, or the like held within the pinata. An expandible frame, as of wire or the like, is mounted within the enclosed space defined by panels and bottom element, and includes portions engaging the lateral panels. The said frame when expanded, displaces the pinata walls to their fully open position; similarly, collapsing of the frame draws the walls inwardly to collapse the pinata for storage. The pinata includes means for suspending the device from an overhead point, and means depending from the frangible bottom for tearing the piece to dispense the pinata contents. The bottom piece is secured to the adjoining walls by means which enable replacement thereof subsequent to tearing.

3,702,676
PALLET ACCESSORY

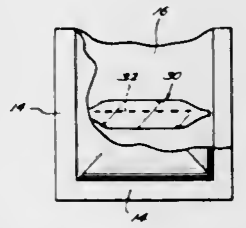
Dennis T. Stephens, Eaton Rapids, and Peter Flees, Charlotte, Mich., assignors to Hoover Ball and Bearing Company, Saline, Mich.
Filed Dec. 30, 1970, Ser. No. 102,704
Int. Cl. B65d *25/14*
U.S. Cl. 229—14 C **5 Claims**



Apparatus for use with pallets of the type which have corner posts for stacking loaded pallets one on top of another and which are adapted to be lifted and moved by conventional fork lift devices. The apparatus is formed preferably of paperboard which is blanked and folded to define an enclosure positioned around the upper periphery of the pallet and to be retained in place by interlocking action of the corners of the paperboard enclosure with the corner posts. Modifications in which other materials are used for making the enclosure are also disclosed.

3,702,677
ANIMAL REPELLENT PACK

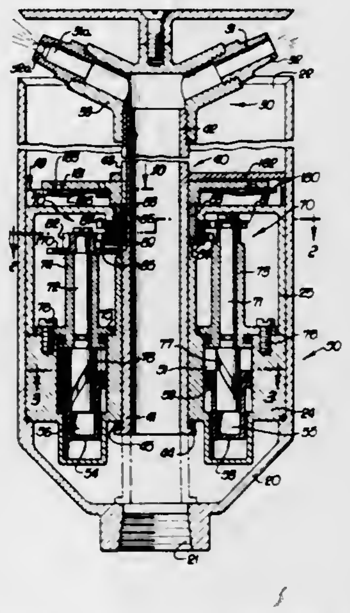
Thomas E. Heffington, 4605 Valerie,
Houston, Tex. 77401
Filed Sept. 10, 1970, Ser. No. 71,019
Int. Cl. A61l *9/04*
U.S. Cl. 239—55 **5 Claims**



The present invention is directed to a disposable package or pack which may be used in conjunction with disposable garbage containers, particularly paper or plastic bags, to prevent the destruction of them or the access to their contents by animals. The preferred embodiment of the present invention is comprised of a package which encloses a breakable sealed container. Carried in the container is a suitable animal repellent. The package itself allows the passage of the animal repellent through its walls at a controlled rate so that the repelling substance will be given off over an extended period of time. The tube is broken by the user, the package is placed in the garbage container and the container is then sealed. The interior of the container will thus become filled with the repelling scent to drive off any animal.

3,702,678
SPRINKLER

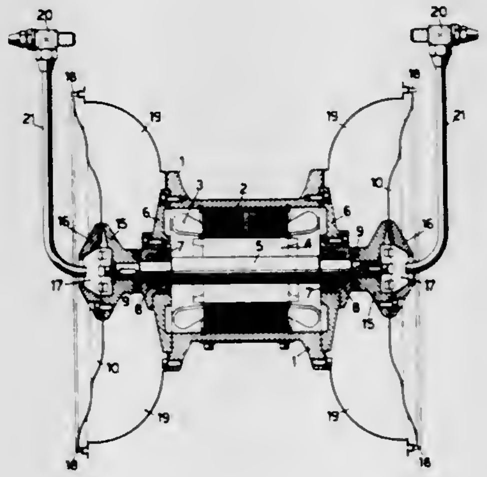
Fred Hauser, 1544 Midvale Ave.,
Los Angeles, Calif. 90024
Filed Aug. 19, 1971, Ser. No. 173,177
Int. Cl. B05b *3/04*
U.S. Cl. 239—206 **13 Claims**



A sprinkler device particularly adapted for industrial applications where large volumes of water are discharged, having a housing, sprinkler head, and hydraulic actuating means which may include at least one double-acting piston and cylinder and valve means for periodically reversing the direction of movement of the piston and means in operative engagement with the hydraulic actuating means to convert reciprocal motion of the piston to rotatable movement of the sprinkler head. Through alternative embodiments, the sprinkler head may be adapted to rotate continuously in one direction or to oscillate in a full circle or part circle mode of operation.

3,702,679
APPARATUS FOR ATOMIZING LIQUIDS BY CENTRIFUGATION

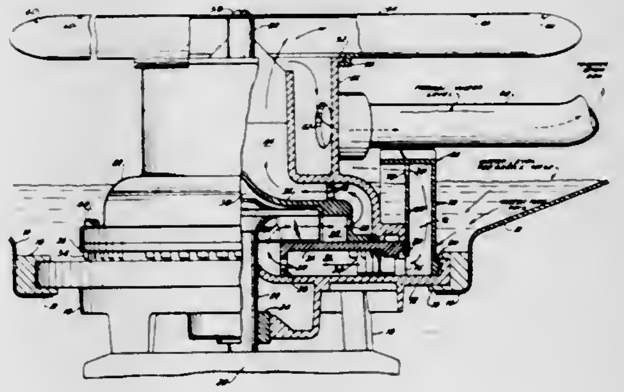
Angelo Mazzini, Via Caccialepori 17, Milan, Italy
Filed Feb. 3, 1971, Ser. No. 112,220
Claims priority, application Italy, Mar. 31, 1970, 22,691/70
Int. Cl. B05b *3/02;* **F23d** *11/04*
U.S. Cl. 239—222.11 **4 Claims**



A new apparatus for atomizing liquids, in particular water, by centrifugation which does not require considerable power for the centrifugal system of high pressure for the liquid, while reducing the losses of the non-atomized liquid. A double centrifugal feeding is provided at the both ends of a shaft of an electric motor to which are coaxially fixed two disk wheels each arranged within and coaxially to a stationary toothed crown wheel.

3,702,680
GENTLE WASH MECHANISM FOR A DISHWASHER

Harold L. Woehler, Herrin, Ill., assignor to
Fedders Corporation, Edison, N.J.
Filed Nov. 8, 1971, Ser. No. 196,476
Int. Cl. B05b *3/06*
U.S. Cl. 239—256 **6 Claims**



A conduit member extends in an upwardly direction from an inlet of a water pump at the bottom of a dishwasher tank. The conduit has an opening formed therethrough having a lower end in communication with the pump inlet and an upper end positioned at a specified level above the bottom of the tank. The pump draws wash water from the wash tank and delivers it under pressure to a spray arm where it is sprayed onto dishes. Water level controls are provided so that for normal washing cycles the water level within the tank is above the upper end of the standpipe; however, for a gentle wash cycle, the water level is maintained below the upper end of the conduit. During a gentle wash cycle, air is aspirated into the pump inlet causing aeration, thereby reducing pump efficiency and the velocity of water leaving the spray arm.

3,702,681

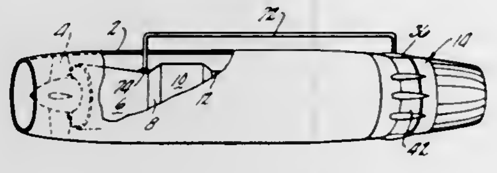
BLOW-IN DOOR ACTUATION FOR AFTERBURNER NOZZLE

Augustus Hasbrouck, Middletown, and Lawrence J. Lauck, South Windsor, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Apr. 7, 1971, Ser. No. 131,972

Int. Cl. B65h *25/46*

U.S. Cl. 239—265.17 7 Claims



The blow-in-doors for an exhaust nozzle are held in open position by an air piston that permits the doors to close when a predetermined pressure differential is built up on the doors. The air pressure for actuating the piston may be a selected compressor pressure so that the pressure varies with engine operating conditions and thus the required pressure for closing the doors will vary correspondingly.

3,702,682

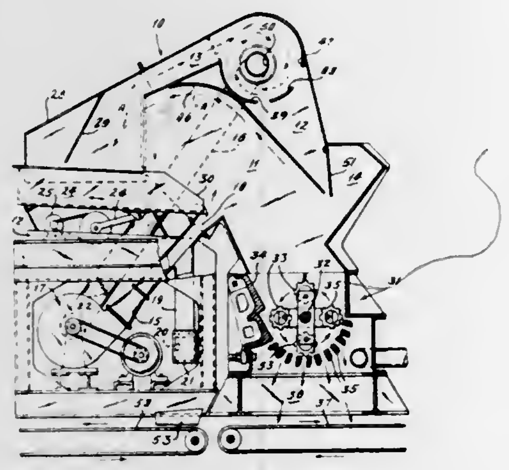
MATERIAL SEPARATOR APPARATUS

Robert M. Williams, Ladue, Mo., assignor to Williams Patent Crusher & Pulverizer Co., Inc., St. Louis, Mo.

Filed Mar. 5, 1971, Ser. No. 121,495

Int. Cl. B02c *13/288*

U.S. Cl. 241—48 10 Claims



Apparatus for separating material having classifications that are different depending on specific gravity as well as buoyancy or responsiveness to air flow entrainment. The apparatus is useful to classify material resulting from shredding old automobiles into recoverable metals, usually non-ferrous solids, and non-metallic wastes, like dirt, cotton, fabrics, glass, plastics, and similar materials. In operation a primary fan induced circulation system is operated at a controlled flow rate to allow gravity fall-out separation of the heavier metallic material in the primary system, while the lighter and usually non-metallic material is collected at several zones, with one zone at a suitable negative pressure capable of forceably scrubbing and separating metallic from the non-metallic materials and returning the metallic material to the system for recycling until the desired separation is obtained.

3,702,683

FUEL INJECTION VALVE

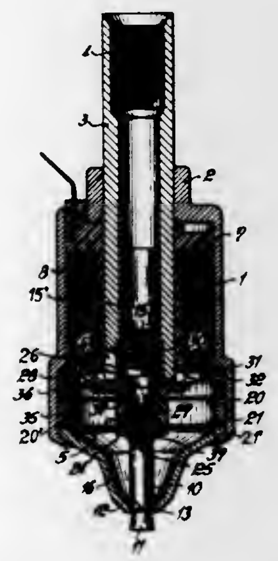
Hans Sturmer, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 22, 1971, Ser. No. 200,967

Claims priority, application Germany, Dec. 18, 1970, P 20 62 420.8

Int. Cl. B05b *1/30*

U.S. Cl. 239—585 10 Claims



A fuel injection valve for internal combustion engines has a housing having a fuel inlet and a fuel outlet. The housing has a valve seat having an axis at the fuel outlet. A valve member is arranged within the housing and axially aligned with the valve seat and movable along the axis of the valve seat between a first position spaced from the valve seat and a second position engaging the valve seat. An electromagnet is provided within the housing which includes an armature connected to the valve member and together forming a unit for moving the valve member when said electromagnet is energized from the second position to the first position. A spring, anchored at one end to the housing, cooperates with the unit and connected thereto to yieldably maintain the valve member in the second position. Two membranes are provided within the housing which are spaced from one another in axial direction of the valve means. The membranes define substantially parallel planes, each membrane being connected to the unit and to the housing for maintaining a valve member in axial alignment with the valve seat. The electromagnet has a central core coaxial with the valve seat axis and a coaxial annular pole ring. The armature has a portion which is made from soft iron and which faces the core and the pole ring. The armature portion facing the core and the pole ring is in the shape of a flat disk, the rest of the armature being made of a light-weight metal.

3,702,684

FLUIDIC CONTROL MIXING NOZZLE

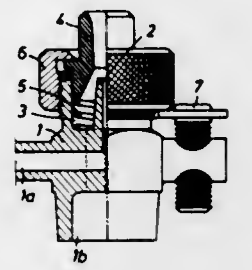
Bernard Bevengut, Paris, France, assignor to Societe Anonyme dite: Etablissements Pierre Bevengut, Vaucluse, France

Filed Feb. 4, 1971, Ser. No. 112,728

Claims priority, application France, Feb. 11, 1970, 7004842

Int. Cl. B05b *7/12*

U.S. Cl. 239—412 13 Claims



A fluid controlled nozzle device in which the stopping or reversing of a flow of a fluid to be atomized or propelled is effected by a driving fluid. The device comprises a convergent-divergent nozzle, one or more pipes carrying driving fluids are connected to the upstream end of the nozzle, an outlet orifice is located in the downstream end thereof. A tube for feeding a fluid to be propelled or atomized is adjustably mounted in the upstream portion of the nozzle. At a predetermined pressure of the driving fluid the zone surrounding the outlet orifice is at a low pressure thereby enabling the discharge of propelled or atomized fluid through the outlet orifice. By varying the pressure of the driving fluid the outlet orifice is in a zone at a high pressure to stop or limit the flow of the fluid from the outlet orifice. The device is particularly useful in atomization, powdering pressure, flow control and the conveying of powdery materials.

3,702,685

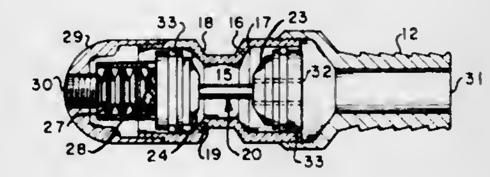
SEWER CLEANING CHEMICAL DISPENSING NOZZLE

John A. Kirschke, P.O. Box 125, Boerne, Tex. 78006

Continuation-in-part of application Ser. No. 96,723, Dec. 10, 1970. This application Nov. 10, 1971, Ser. No. 197,245

Int. Cl. B05b *1/30*

U.S. Cl. 239—533 8 Claims



A two stage sewer cleaning chemical dispensing nozzle particularly adapted for utilization in dispensing root fumigants. The nozzle incorporates an internal spring loaded pressure responsive valve constructed with front and rear needle valves and front and rear valve seats responsive to pressure variations selectively activating rearward or forward jets as desired for propulsion, cleaning, or chemical fumigant dispensing.

3,702,686

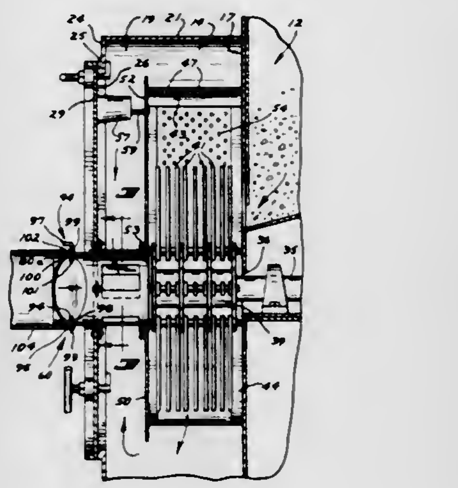
AIR VALVE STRUCTURE FOR HAMMER MILL

Howard C. Jacobson, 1269 N. Cleveland, St. Paul, Minn. 55108

Filed Aug. 23, 1971, Ser. No. 173,817

Int. Cl. B02c *13/288*

U.S. Cl. 241—59 5 Claims



An air valve structure in connection with a grinding mill to control the recirculation of air therein and the admission of air thereto. Said air valve structure consists of a pair of cylindrical members with one being disposed within the other and with each having a plurality of vents circumferentially spaced thereabout, said members being rotatably movable relative to one another to position their respective vents in different degrees of registration with one another to control the recirculation of air within the grinding chamber and said valve structure extends outwardly of said mill and has means therein to control the passage of outside air therethrough to said grinding chamber.

3,702,687

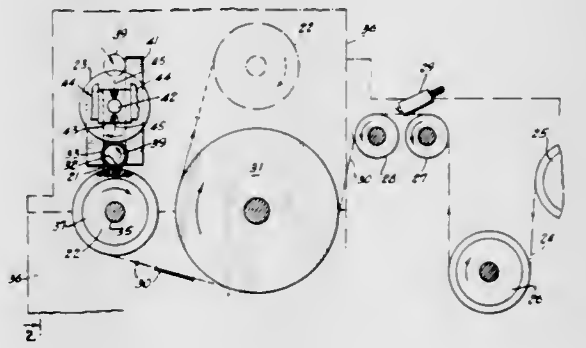
WINDING DEVICE

Joseph J. Hall, Somerville, N.J., assignor to Johnson & Johnson

Continuation-in-part of application Ser. No. 701,196, Jan. 29, 1968. This application July 2, 1970, Ser. No. 51,901

Int. Cl. B65h *19/04*

U.S. Cl. 242—56.9 25 Claims



A differential surface winding device for winding a number of rolls of pressure-sensitive adhesive tape upon cores mounted in axially spaced relation from one another upon the same mandrel, which comprises a mandrel on which the tape cores are rotatably mounted, means associated with the mandrel for maintaining the cores and the tape rolls wound thereon in definite positions axially spaced from one another on the mandrel, a driving roll presenting a relatively compressible and resilient peripheral surface portion adapted to contact all of the cores and/or tape rolls on said mandrel, and means for urging the mandrel and the driving roll toward one another with sufficient force to provide intimate driving contact between the driving roll and the tape rolls. The resilient peripheral surface portion of the driving roll is sufficiently resilient and compressible to allow a tape roll which acquires a somewhat larger diameter to sink further into the driving roll than the tape rolls of smaller diameter while maintaining driving contact with each of the tape rolls on the mandrel. In addition, the resilient driving roll contacts all of the tape rolls at the points where the tapes being wound on the rolls first contact their respective rolls or cores in such a way as to express the air from between the convolutions of the rolls as the tapes are being wound.

3,702,688

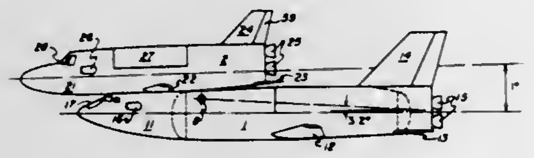
SPACE SHUTTLE VEHICLE AND SYSTEM

Maxime A. Faget, Dickinson, Tex., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Jan. 4, 1971, Ser. No. 103,551

Int. Cl. B64c *37/02*

U.S. Cl. 244—155 **17 Claims**



A space shuttle system comprising two reusable stages, joined "piggyback" fashion for lift-off, each stage being a manual attitude controlled vehicle having fixed, aerodynamic support and control surfaces for horizontal atmospheric flight and conventional, near stall, aircraft landings. The fuselage bottom surface of each stage is transversely relatively flat and longitudinally cambered to provide dynamic lift at hypersonic atmosphere re-entry velocities and high angles of attack. Newtonian fluid flow states over bottom surfaces and the dispersion of flow stagnation regions over large areas hold vehicle surface temperatures during re-entry to tolerable levels. Other aerodynamic criteria are balanced so that each stage will have stable flight characteristics at both high and low attack angle attitudes during both the re-entry and the subsonic atmospheric flight phases.

3,702,689

APPARATUS FOR GRIPPING AND PULLING AN ELONGATED FLEXIBLE ELEMENT

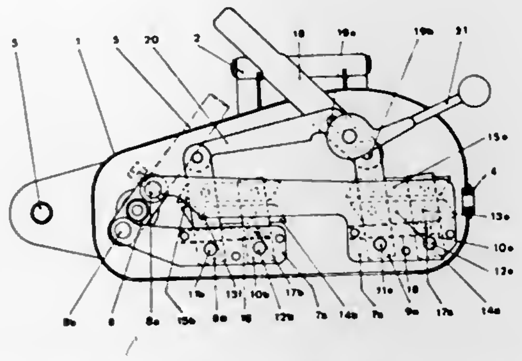
Alfred Zeller, Gotthardstr. 12, Thalwil, Switzerland

Filed Jan. 6, 1971, Ser. No. 104,246

Int. Cl. B66f *1/00*

U.S. Cl. 254—107 **9 Claims**

Two pairs of jaws are provided in line in a single housing, each pair being adapted to work in alternation with the other and each in turn gripping and moving the elongated flexible element and then releasing it and moving along the same to renew its grip, for effecting a displacement of a load or weight attached for instance to one end of the element or, for similar purposes. The jaws are connected with linkages to constitute with the same movable parallelograms which grip the element under the influence of traction on the same in such a manner that with increasing load the gripping force increases, but to a proportionately smalled extent.



3,702,690

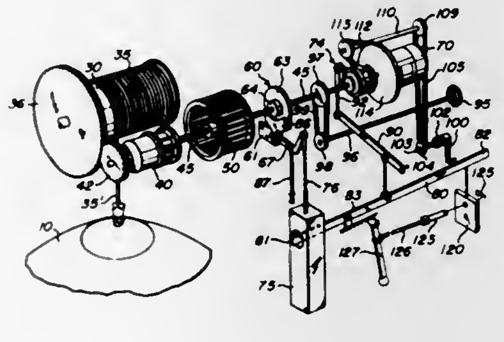
WINCH LAUNCH SYSTEM

William T. Higgins, Springfield, Ohio, assignor to Kelsey-Hayes Company, Springfield, Ohio

Filed Dec. 7, 1970, Ser. No. 95,430

Int. Cl. B66d *1/00*

U.S. Cl. 254—187 **2 Claims**



A launching system is disclosed useful for raising and lowering life support capsules and the like from off-shore drilling rigs, in which the capsule is lowered by a winch at a controlled rate as regulated by a centrifugal blower operated through speed-up gearing. A disk brake on the blower shaft holds the life support capsule in any given position. Provision is included for releasing the brake at a remote point, such as within the capsule, to provide for an unpowered and controlled descent. The brake is connected through a one-way clutch so that the capsule may be raised by the rotation of the winch while the brake is on to prevent accidental descent of the capsule. An electric motor is provided for raising the capsule by the winch, and is isolated by means of a clutch which works on an operator common with that of the brake to assure that the motor is de-clutched prior to releasing the brake, in a lowering operation. Provision is included for raising the capsule by hand, and also for manually retrieving and paying out the cable when the capsule is not attached.

3,702,691

MULTISTAGE MACHINE FOR THE PLASTIFICATION AND EXTRUSION OF SYNTHETIC PLASTIC MATERIALS

Rudolf P. Fritsch, Stuttgart, Germany, assignor to C. F. Scheer & Cie, Stuttgart, Germany

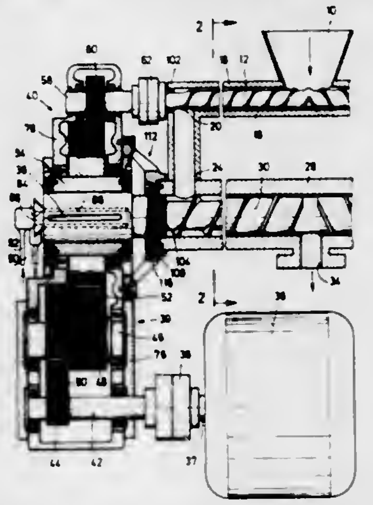
Filed July 27, 1971, Ser. No. 166,354

Claims priority, application Germany, Aug. 1, 1970, P 20 38 327.1

Int. Cl. B01f *7/08*

U.S. Cl. 259—192 **22 Claims**

A machine for plasticizing and extruding pulverulent thermoplastic or duroplastic material has a first stage with a barrel for two intermeshing plasticizing and metering screws which convey plastic material from the center toward both ends of the barrel and a second stage having a barrel for one or two extruding screws which serve to convey plasticized material from the ends toward a discharge opening in the center of the respective barrel. The ends of the barrel in the second stage communicate with the ends of the barrel in the first stage. The drive for the screws has a single electric motor which rotates the screws by way of gear transmissions with interchangeable gears. The screw or screws of the second stage transmit torque to the screws of the first stage and the screw or screws of the second stage can be removed or reinserted by moving axially through a gear of at least one of the transmissions which drive the screws of the first stage. The barrel of the first stage can be opened lengthwise to afford access to the respective screws.



3,702,692

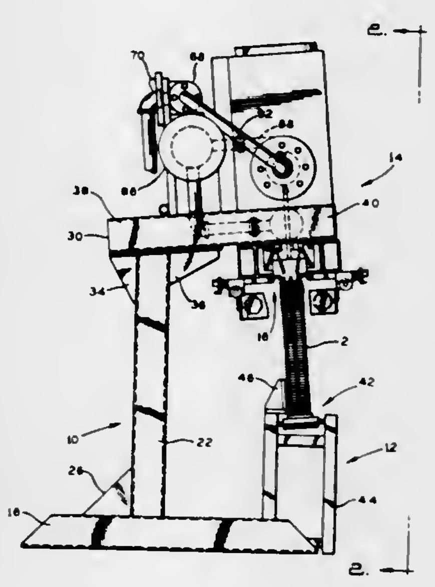
CONTINUOUS PROCESS BRAZING METHOD AND APPARATUS

Benjamin A. Metzger, Novelty, Ohio, and Harry E. Miller, Oxford, N.Y., assignors to Pryonics, Incorporated, Cleveland, Ohio

Filed Aug. 3, 1970, Ser. No. 60,590

Int. Cl. F27b *9/14*

U.S. Cl. 263—6 R **8 Claims**



Method and apparatus for brazing workpieces such as radiators and the like where the brazing temperature is in excess of 1000° F. and the temperatures used are critical. The apparatus includes means for continuously conveying the workpieces along a generally horizontal path. Positioned above the conveying means and about the path are adjustable dampers which define three side-by-side chambers that extend longitudinally of the path with the free edge of the dampers cooperating to provide adjustable openings from the chambers. The openings face the portion of the workpiece which is to be heated for brazing. Hot gases are supplied to the center chamber at temperatures suitable for preheating and brazing the workpieces. The gases are directed at high velocity against the workpiece and thereafter drawn into the two side chambers which are maintained under a negative pressure. The arrangement is such that heating of the workpieces can be closely confined to a desired portion without unnecessary and/or damaging heating of the remainder. Additionally, means are provided for rapidly and efficiently cooling the parts following the brazing operation.

3,702,693

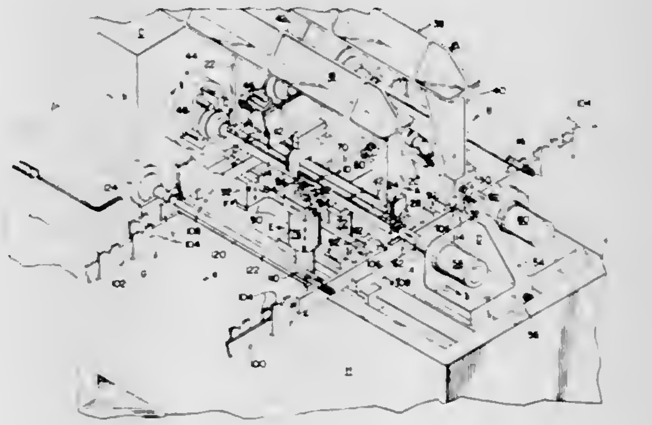
METHOD AND APPARATUS FOR INDUCTIVELY HEATING AND QUENCHING ELONGATED WORKPIECES

Norbert Raymond Balzer, Parma, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Dec. 14, 1970, Ser. No. 97,890

Int. Cl. C21d *1/66*

U.S. Cl. 266—4 S **7 Claims**



A method and apparatus for inductively heating and quenching an elongated shaft element over substantially the entire length thereof which apparatus includes an elongated inductor housing having a generally U-shaped cross-section with an inductor loop imbedded longitudinally therein and an elongated quenching apparatus disposed in generally parallel side-by-side relationship. The shaft element is fed to a position directly below and coextensive with the inductor housing and inductor and then raised into inductive coupling therewith while being rotated about its longitudinal axis. Following heating, the element is transferred in like manner in communication with the quenching apparatus where it is quenched while being similarly rotated.

3,702,694

METHOD AND APPARATUS FOR JUDGING THE CONDITIONS OF BLAST FURNACE

Naoteru Oda, Kobe, Seiichi Nishimura, Takatsuki, and Hideo Komatsu, Suita, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

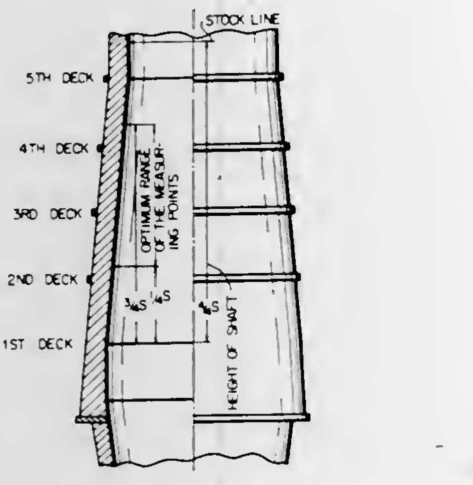
Filed May 12, 1971, Ser. No. 142,605

Claims priority, application Japan, May 20, 1970, 45/43,510

Int. Cl. C21b *7/24*

U.S. Cl. 266—27 **6 Claims**

Among the solid borne sounds generated by the mantle of the blast furnace in operation, the magnitude of the level of the solid borne sounds within a specific frequency band is correlated with the conditions of the blast furnace, for example, slipping, hanging or falling of the hanging. A detector detects solid borne sounds from the mantle of the blast furnace, a band pass filter circuit selects the solid borne sounds within the specific frequency band, and an integration circuit produces signals expressing the mean intensity level of the selected solid borne sounds. Through the signals the condition of the blast furnace is judged.



3,702,695

APPARATUS FOR CONTINUOUSLY REFINING METAL

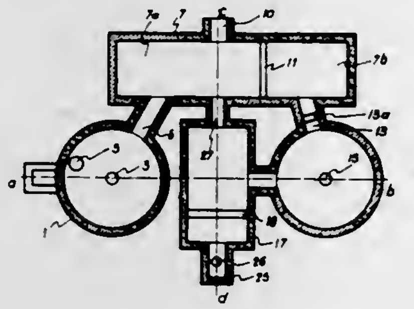
Jean Rouanet, Saint Maur-des-Fosses, France, assignor to Institut de Recherches de la Siderurgie Francaise, Saint Germain-en-Laye (Yvelines), France

Original application Mar. 11, 1968, Ser. No. 712,005. Divided and this application May 21, 1971, Ser. No. 145,844

Claims priority, application France, Mar. 13, 1967, 98,464

Int. Cl. C21c *7/00*

U.S. Cl. 266—34 T **6 Claims**



An apparatus for continuously refining metal in at least two stages in which partly refined metal and slag formed in a first refining vessel is passed into a first decanting vessel adjacent thereto in which the slag is separated from the partly refined metal and the latter fed into a second refining vessel and the further refined metal and slag produced therein is fed into a second decanting vessel from which the metal is discharged while the slag is passed back into the first decanting vessel to react with the partly refined metal and slag therein.

3,702,696

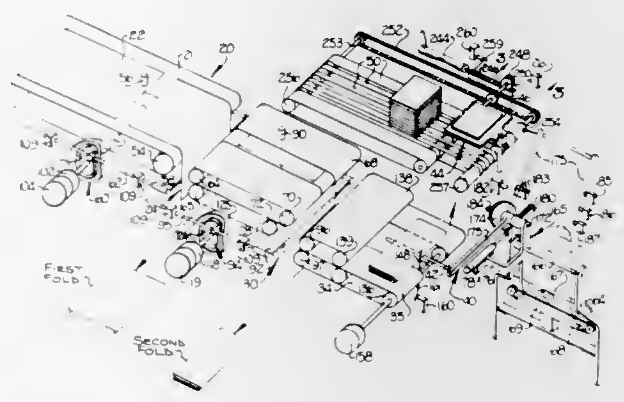
APPARATUS FOR FOLDING AND STACKING FLEXIBLE SHEETS

Richard K. Teed, Greenwood, S.C., assignor to Riegel Textile Corporation, New York, N.Y.

Filed Feb. 18, 1971, Ser. No. 116,438

Int. Cl. B65h *45/22*

U.S. Cl. 270—66 **9 Claims**



An apparatus for sequentially folding and stacking individually received sheets of a flexible material to prepare counted stacks of the folded sheets for subsequent packaging. The illustrated embodiment of the apparatus includes means for conveying the individual sheets along a path of travel, first transverse folding means positioned intermediate the path of travel for folding each sheet upon itself along a transverse fold line, second transverse folding means positioned intermediate the path of travel and subsequent to the first folding means for imparting a second transverse fold, and longitudinal folding means adjacent the terminal end of the path of travel for imparting a longitudinal fold. The thus folded sheets are then delivered to a platform which sequences downwardly upon receiving each folded sheet such that the level at which the folded sheets are received on the platform remains substantially constant. When the platform reaches its lowest position a delivery belt is actuated to remove the stack of folded sheets from the platform and transport the same to a packaging station.

3,702,697

HANDLING DEVICE FOR INFORMATION CARRYING SHEETS

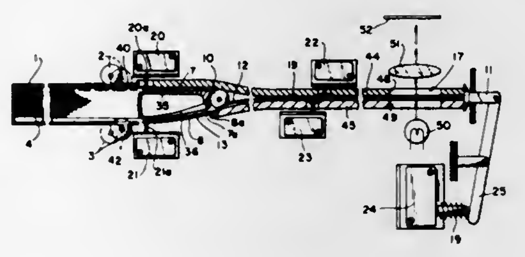
Manfred Leutwein, Rommelshausen, and Heinz Streicher, Echterdingen, Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 2, 1970, Ser. No. 25,183

Claims priority, application Germany, Apr. 2, 1969, P 19 16 863.9

Int. Cl. B65h *5/06, 29/22*

U.S. Cl. 271—3 **11 Claims**



Apparatus is disclosed for receiving a cartridge or magazine storing a stack of information bearing media and for selectively transporting in succession information bearing media in a stack of similar media, either in a first apparatus mode, from a first position in the stack to a utilization station and back to a last position in the stack, or in a second apparatus mode, from a last position in the stack to the utilization station and back to a first position in the stack.

3,702,698

SUCTION-OPERATED DEVICE FOR FEEDING SHEETS ONE BY ONE TO A POINT OF UTILIZATION

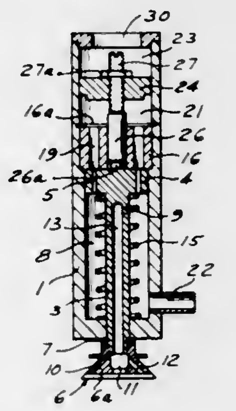
Adolf Schwebel, Offenbach am Main, Germany, assignor to Mabeg-Maschinenbau G.m.b.H. Nachf. Hense & Pleines G.m.b.H. & Co., Offenbach am Main, Germany

Filed July 2, 1971, Ser. No. 159,261

Claims priority, application Germany, July 16, 1970, P 20 35 294.7

Int. Cl. B65h *3/08*

U.S. Cl. 271—26 **3 Claims**



A suction-operated device for lifting sheets one by one from a stack of sheets and feeding the same to a point of utilization comprises an upright cylinder in which a piston mounting a suction head is sequentially lowered from a position above the uppermost sheet on the stack into a position sucking on and holding this sheet and lifted from this position into a position in which the held sheet is ready for conveyance to the point of utilization. These movements of the suction head are controlled by creating temporary pressure differentials in the cylinder causing the aforedescribed down and up movements of the suction head. Upon arrival of a sucked on and held sheet at the point of utilization, the sheet is released by discontinuing the vacuum in the cylinder. The device further permits adjustment of the length of the stroke performed by the piston during each operation.

3,702,699

SWINGING DOLL GAME

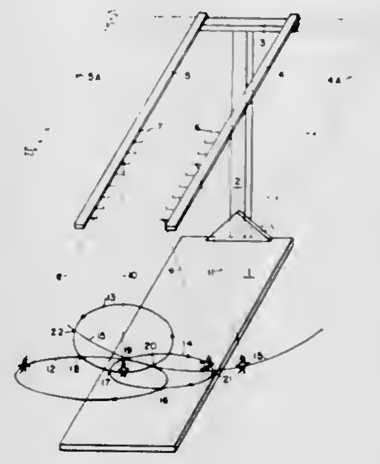
George T. Smith, 5435 Hardee St., Naples, Fla. 33940

Filed Nov. 5, 1968, Ser. No. 774,589

Int. Cl. A63f *9/00;* **A63h** *15/04*

U.S. Cl. 273—1 R **3 Claims**

A game having a base with an upright at one end thereon with a cross-piece on the top of the upright supporting parallel arms with each arm having a series of spaced hook-like members secured thereon to each of which there is suspended a miniature figure capable of swinging in any particular path when manually impelled.



3,702,700

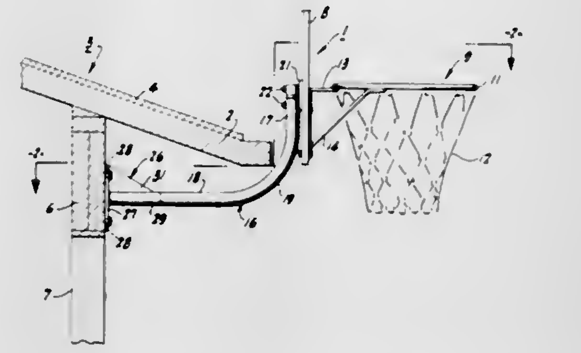
BASKETBALL BACKBOARD AND BACKBOARD SUPPORT

James P. Burke, 1510 Springweed, Modesto, Calif. 95350

Filed June 18, 1970, Ser. No. 47,348

Int. Cl. A63b *63/02*

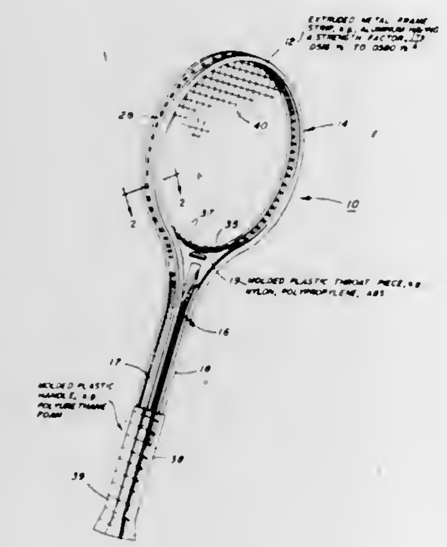
U.S. Cl. 273—1.5 R **9 Claims**



Improved support structure for mounting a basketball backboard and basket in operative position relative to the eaves of a building, such as a house or garage. A single supporting member is utilized having a structure in which the need for ancillary braces or additional supporting members between the backboard and the roof or eaves of the building is obviated. The structure consists of a vertical section with one end connected to one end of a horizontal section wherein the opposite end of the vertical section is attached to a plate supporting a basketball backboard and the opposite end of the horizontal section is attached to a plate which facilitates the fastening of the structure to the side of a building under the eaves thereof. The simplified construction of the support structure permits easy attachment of the backboard and basket to the building and permits simplified removal therefrom when desired. Damage to the building framework or roof is obviated when the support structure of this invention is utilized.

3,702,701
METAL TENNIS RACKET WITH PLASTIC THROAT PIECE AND MOLDED PLASTIC HANDLE

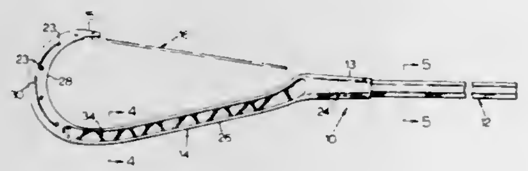
George A. Vaughn and Richard D. Hargrave, Princeton, N.J., assignors to Maark Corporation
Filed Aug. 28, 1969, Ser. No. 853,676
Int. Cl. A63b *49/08, 49/12*
U.S. Cl. 273—73 H **16 Claims**



The metal racket is made from an extruded aluminum strip comprising a pair of opposed tubular sections connected by a web, with a strength factor of IY_s/A in the range of $0.0516Y_s$ to $0.0580Y_s$. The metal strip has a first channel in its outer periphery and a second channel in its inner periphery. A plastic throat piece is provided with outer surfaces shaped complementarily to the configuration of the inner periphery of the metal strip. The racket further having a solid molded plastic handle made of a foamed plastic material molded to the lower extremities of the metal strip.

3,702,702
LACROSSE STICK

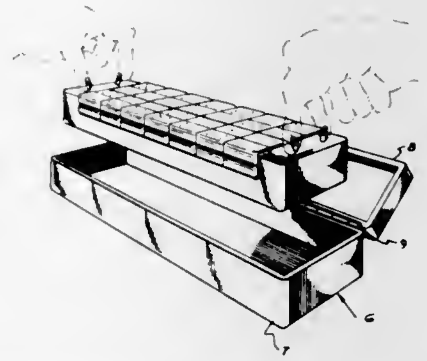
John A. Hoult, Toronto, Ontario, Canada, assignor to J. A. Hoult Enterprises Limited, Toronto, Ontario, Canada
Filed Aug. 1, 1969, Ser. No. 846,875
Int. Cl. A63b *65/12*
U.S. Cl. 273—96 D **5 Claims**



A novel guard, plastic hooked portion, and handle for a lacrosse stick. The hooked portion comprises in seriatim a shank adapted to receive the handle, a straight portion having a U-shaped cross-section, a curved portion and a toe, and the guard comprises a planar member having openings at opposite ends for attaching the guard to the shank and to the toe of the hooked portion. The handle comprises a tube having a plurality of inwardly extending longitudinal ribs and an elongated rod frictionally supported in the tube by the ribs.

3,702,703
CRIBAGE BOARD AND CONTAINER ASSEMBLY FOR DOMINOES

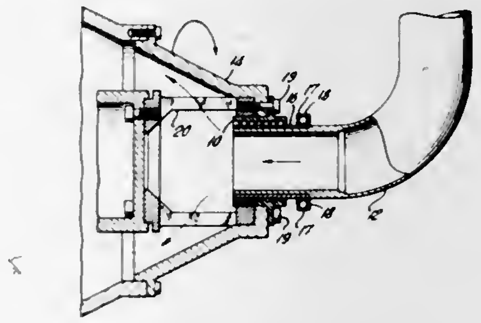
Clair O. Du Bois, Pebble Beach, Calif., assignor to Clair O. Du Bois and Charles W. Johnson, doing business as Putter-Craft Company, Pacific Grove, Calif.
Filed Nov. 24, 1971, Ser. No. 201,800
Int. Cl. A63f *9/20*
U.S. Cl. 273—148 R **1 Claim**



An improved domino game assembly is provided in which the dominoes are packed on the cribbage board utilized to score the game. The cribbage board with the dominoes fit snugly within a container from which they are removed by grasping pairs of scoring pins. The pins are provided at opposite ends of the cribbage board at an acute angle to the vertical so that when each pair of pins is grasped between the thumb and forefinger of each hand, the cribbage board and the assembled dominoes may be readily removed from or placed in the box.

3,702,704
NONCONTACTING SEAL FOR CENTRIFUGE INLET

Heinz P. Bloch, Chester, N.J., assignor to Esso Research and Engineering Company
Filed Dec. 24, 1970, Ser. No. 101,313
Int. Cl. F16j *15/54;* **B61f** *15/22*
U.S. Cl. 277—134 **3 Claims**

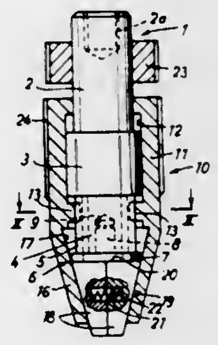


A non-contacting seal bushing has a bore machined in the form of a helical labyrinth which, when mounted on a rotating centrifuge distribution cone, prevents by-passing of feed slurry between the feed pipe and the distribution cone.

3,702,705
CHUCK

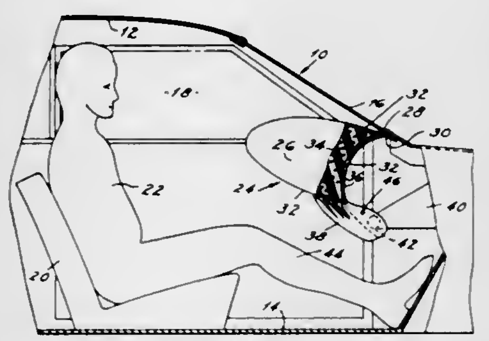
Fritz Schadlich, Stetten, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany
Filed May 27, 1970, Ser. No. 40,814
Claims priority, application Germany, June 7, 1969, P 19 28 954.4
Int. Cl. B23b *31/19*
U.S. Cl. 279—62 **7 Claims**

A chuck has a sleeve, through an opening in a transverse wall of which a portion of a shaft member extends into the interior and towards the open end of the sleeve which is opposite and remote from the transverse wall. The inner circumferential surface of the sleeve tapers conically in direction towards the open end. A plate member is carried on the shaft extending normal to the axis thereof. A plurality of gripping jaws are located in the sleeve intermediate the plate member and open end. They each have an endface abutting the plate member and an outer surface complementary to and in engagement with a portion of the inner ciricumferential surface. Springs urge the gripping jaws permanently radially away from each other and into abutment with the plate member. Adjusting means permits movement of at least part of the sleeve axially of the shaft to rapidly displace the jaws relative to one another, and also permits rotary movement of at least part of the sleeve relative to the shaft so as to enable tightening of the jaws in their respective position.



3,702,706
MOTOR VEHICLE RESTRAINT DEVICE

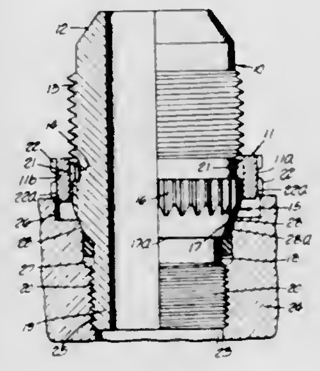
William J. Sobkow, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Jan. 15, 1971, Ser. No. 106,756
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 AB **2 Claims**



A motor vehicle restraint device for use in absorbing energy from a passenger during vehicle decelerations of either moderate or excessive amounts is described. The restraint device includes a static or fixed restraint structure normally positioned generally forward of a seated passenger. This static structure is movable with respect to the vehicle structure in a direction generally upward from its normal position. During moderate vehicle decelerations, the vehicle passenger may engage the structure and the structure will absorb energy by deformation. A dynamic air bag is mounted below the static restraint structure. During a vehicle deceleration of an excessive amount, the air bag is inflated to contact the lower portions of the body of the passenger. Inflation of the air bag also causes the static restraint structure to be moved upwardly to a location in the general path of travel of the upper portion of the body of the passenger.

3,702,707
FITTINGS FOR HIGH PRESSURE FLUID LINES

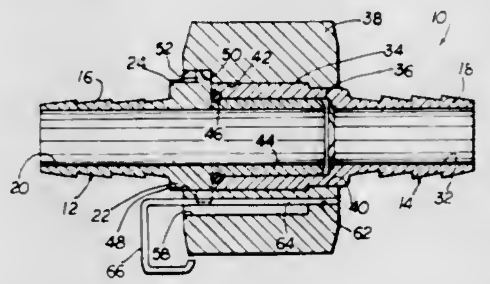
Jose Rosan, Sr., Rancho San Juan, San Juan Capistrano, Calif. 92675
Filed June 23, 1971, Ser. No. 155,854
Int. Cl. F16l *55/00*
U.S. Cl. 285—23 **6 Claims**



This invention provides improvements in a fluid fitting which is locked against loosening due to vibration by means of a coacting serrated locking ring which is temporarily rigidly secured to the body of the fitting so as to provide an integral unit. The fluid fitting of the invention provides an improved positive seal whereby the beveled portion of the fitting has a taper thereto which allows said tapered portion to extend into and beyond the beveled surface of the cooperating workpiece bore.

3,702,708
QUICK CONNECT LUGGED COUPLING

Donald B. Moore, Pontiac, Mich., assignor to Locking Devices, Inc., Pontiac, Mich.
Filed Aug. 28, 1970, Ser. No. 67,776
Int. Cl. F16l *37/24*
U.S. Cl. 285—87 **5 Claims**

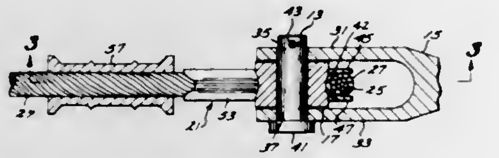


The coupling includes male and female elements which are secured together by means of lugs on the male element which extend through notches to be received in a groove in the female element. An interior surface of the groove is provided with a movable protuberance and a fixed protuberance which assure proper rotation of the elements when engaged and provide a stop for the lugs. The movable protuberance is spring-biased. The lugs have camming faces on the leading edges to cam the movable protuberance out of the way when the elements are turned in one direction to thereby permit coupling of the device.

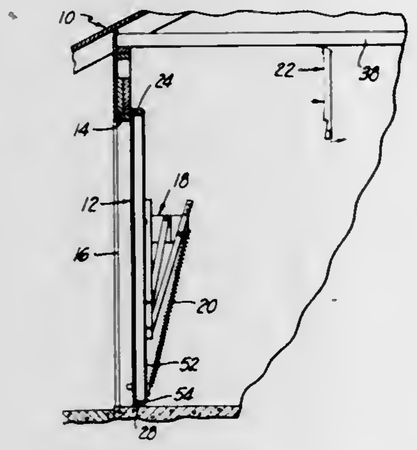
3,702,709
CABLE CONNECTOR

Frank E. Shaffer, P.O. Box 1546, Costa Mesa, Calif. 92626
Filed May 20, 1971, Ser. No. 145,196
Int. Cl. F16g *11/00*
U.S. Cl. 287—81 **6 Claims**

A cable connector including an elongated fitting carrying a mounting pin which has an enlarged bushing formed with a peripheral load-bearing groove mounted thereon. A generally C-shaped thimble is formed with an enlarged central bite portion which is larger in interior cross section than the longitudinal cross section of the groove for receipt in such groove. Further, the thimble is formed at its opposite extremities with a pair of inwardly angled legs, such thimble being formed exteriorly with a peripheral cable-receiving trough whereby the bushing may be mounted on the mounting pin and thimble fitted thereover and the cable fed through the trough and looped around such thimble and secured so that when forces are applied to the cable, the bushing and thimble will cooperate to maintain the looped portion formed with a relatively larger cable to prevent sharp bends therein and the trough will provide support against flattening of the cable which enables the thimble to articulate relative to the bushing.



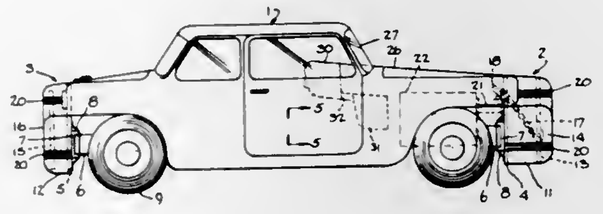
3,702,710
LATCH FOR OVERHEAD DOORS
Lyle M. Nutter, 3252 Feather Ave.,
Baldwin Park, Calif. 91706
Filed Nov. 23, 1970, Ser. No. 91,688
Int. Cl. E05c *17/08*
U.S. Cl. 292—235 **7 Claims**



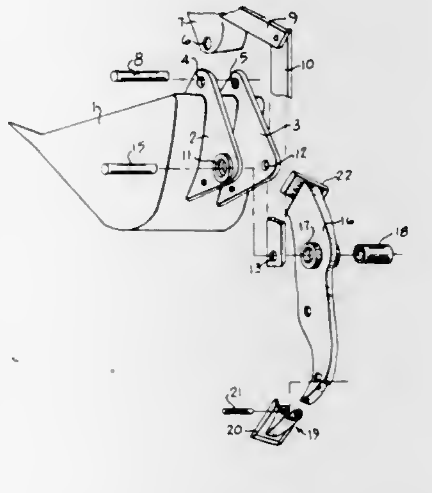
A latch for locking an overhead door in open position. The latch has a latching means, disclosed as a hinged free hanging latch bar, which enters into latching engagement with the upper edge of the door when the latter swings to open position to lock the door in this position, and latch release means carried by the door and operable from the lower edge of the door for retracting the latching means from latching engagement with the open door.

3,702,711
MOTOR VEHICLE INJURY AND DAMAGE PREVENTION SYSTEM
Addison S. Beckley, Short Hills, N.J., assignor to
Uniroyal, Inc., New York, N.Y.
Filed May 8, 1970, Ser. No. 35,720
Int. Cl. B62d *29/04;* **B60r** *19/08*
U.S. Cl. 296—31 P **26 Claims**

A motor vehicle damage and injury preventing system is disclosed. The system is based upon shock-absorbing bumpers extending over substantially the entire flattened front and rear ends of a specially designed vehicle and made up of a relatively thin sheet of compressible, rigid but bendable, shock-absorbing, impact-resistant material on the outer face of which is a relatively thick mass of cellular shock-absorbing plastic material. Typically a second relatively thin sheet of the impact-resistant material is provided on the outer portion of the cellular shock-absorbing plastic material and a second relatively thick mass of the cellular shock-absorbing plastic material is provided on the outer portion of this second sheet. In this way the second sheet can move inwardly and distribute the force of impacts during collisions over the entire area of the cellular plastic behind it and also over the entire flattened end of the vehicle.



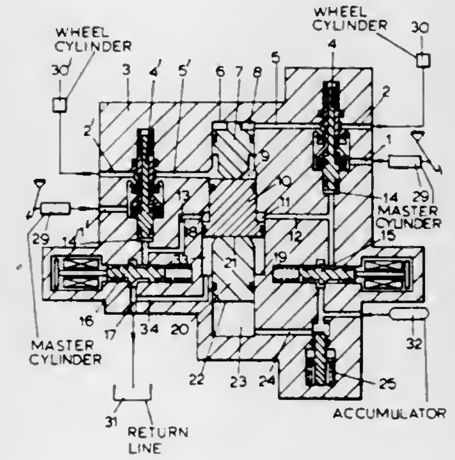
3,702,712
RIPPER TOOTH FOR BACKHOE
Benjamin F. Cairns III, West Point, Pa., assignor to
James J. Devery, Kulpsville, Pa.
Filed July 22, 1971, Ser. No. 169,567
Int. Cl. E02f *3/76*
U.S. Cl. 299—67 **5 Claims**



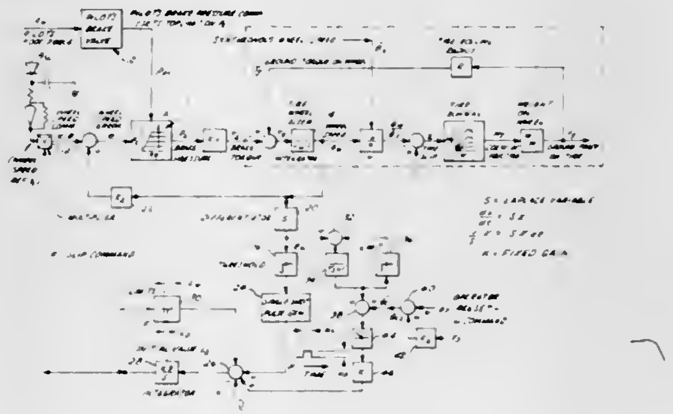
A ripper tooth attachment for a backhoe, adapted for attachment to a standard form of backhoe without structural modification, and susceptible of being left attached without interfering with normal operation of the backhoe.

3,702,713
ANTI-SKID CONTROL DEVICE
Heinrich Oberthur, Offenbach-Rumpenheim, Germany, assignor to ITT Industries, Inc., New York, N.Y.
Filed June 30, 1971, Ser. No. 158,345
Claims priority, application Germany, Sept. 16, 1970, P 20 45 689.7
Int. Cl. B60t *8/02*
U.S. Cl. 303—21 F **13 Claims**

An electrically controlled anti-skid control device for a two-circuit brake system is disclosed. The space requirement for such a device is reduced due to its construction because both brake circuits employ in common only one volume expansion device and one hydraulic pressure accumulator. The volume expansion device includes one floating piston separating the two brake circuits from each other, an actuating piston, and a separating piston to separate the two brake circuits from the accumulator pressure controlling the actuating piston and the separating valves disposed in each of the two brake circuits. Due to the construction of the volume expansion device, the volume expansion is always linearly related to a wheel locking control signal. Thus, no subpressure and no pressure peaks will occur in the two brake circuits. The strongly pre-stressed return spring of the prior art is omitted, the movement of the floating, actuating and separating pistons being hydraulically controlled in both directions.

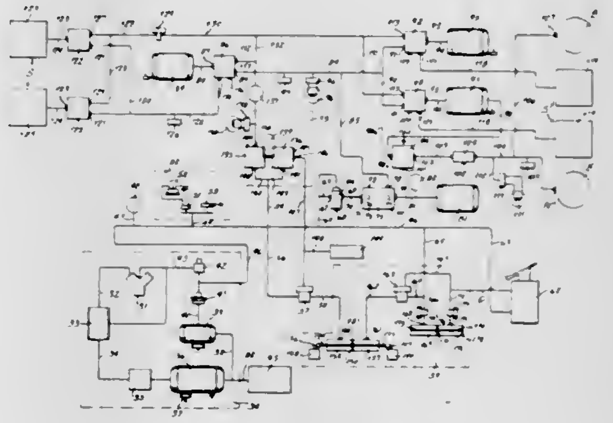


3,702,714
SLIP COMMAND SKID CONTROL WITH ACCELERATION OVERRIDE
Orland D. Branson, Sunland, Calif., assignor to
The Bendix Corporation
Filed Apr. 30, 1971, Ser. No. 139,029
Int. Cl. B60t *8/08, 8/10*
U.S. Cl. 303—21 P **4 Claims**



A skid control system is described which modifies an operator's brake pressure request in such manner as to deliver maximum braking effectiveness by continuously searching the roadway surface condition to determine the percentage of tire slip at which maximum braking occurs and to modulate the brake pressure such that the percent tire slip is forced into region resulting in maximum braking. An electrical wheel speed signal is generated in each braked wheel in which frequency varies with speed, and this signal is supplied to constant or "hold and track" circuit means to provide a wheel speed reference. The system will also operate with a single braked wheel. This reference is combined with a slip command signal to produce a wheel speed error signal. A small amount of the integral of this wheel speed error is added to itself, and the sum is supplied to a servo valve which may modify the operator's brake pressure command. When any of the wheels experiences a deceleration greater than a threshold value, indicating the point of maximum braking has been passed, an output pulse is provided which effectively reduces the slip command signal (percent slip) to force the slip back to slightly below the maximum braking point. The percent slip command is slowly increased at a fixed rate until the cycle is repeated, thus continuously locating the point of maximum braking and keeping the system in this region. The deceleration signal is also supplied to a control loop which compares sensed deceleration against a deceleration reference and, if the deceleration exceeds the reference, supplies a signal to modify the slip command signal in the sense of reducing braking force to provide smoother application of the brakes and constant deceleration force on the vehicle and passengers. Alternatively, the reference is varied with vehicle speed and other factors to produce greater braking effectiveness, particularly at high speeds where other factors, such as drag, tend to produce the greater proportion of the deceleration.

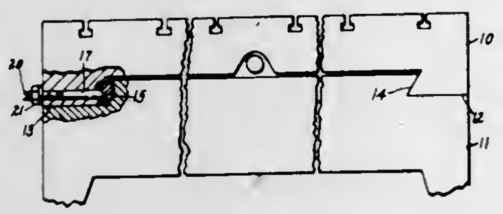
3,702,715
PNEUMATIC BRAKE SYSTEM
Kenneth D. Ryburn, Chillicothe, and Robert J. McClone and Charles H. Fox, Washington, Ill., assignors to Westinghouse Air Brake Company, Pittsburgh, Pa.
Filed Jan. 21, 1971, Ser. No. 108,579
Int. Cl. B60t *17/04*
U.S. Cl. 303—30 **12 Claims**



A pneumatic brake system for an electrically driven vehicle having conventional service and novel parking brakes, which system integrates a service braking system, a dynamic braking system, an emergency braking system, and a parking braking system for selective and automatic application. The dynamic and service brakes are controlled by a brake application valve having a foot treadle adapted for engagement by the vehicle operator and connected in tandem with service and dynamic braking valves so that upon initial engagement of said treadle dynamic braking is effected. The emergency brake system is operated automatically through the use of emergency relay valves upon attainment of a predetermined air pressure within the brake system and includes a brake reapplication system which may be employed to release and then reapply the service brakes after an emergency braking condition. The parking brake is of the spring operated, air pressure released type and is adapted for independent application by a manual control valve disposed within the parking brake line.

3,702,716
ROUND GIB FOR MACHINE SLIDE

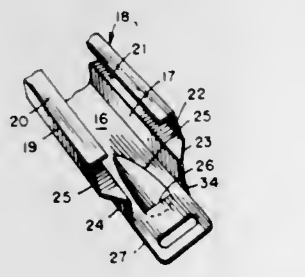
Jacob Decker, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Feb. 8, 1971, Ser. No. 113,168
Int. Cl. F16c *17/00*
U.S. Cl. 308—3 A **4 Claims**



A round bar gib for insuring a perfect fit and taking up wear between a pair of relatively movable members such as a machine tool slide and the support therefor. The gib is formed from a round straight bar which may be centerless ground to a high degree of accuracy thereby providing a simple and inexpensive gib which requires no hand fitting. The round gib lends itself to a design in which any lost-motion between the slide and its support is taken up in two directions simultaneously. Also, the gib may be made of hardenable material and ground to final size after it has been hardened. Thereby, the wear and friction characteristics between the slide and its support are improved and better sliding action is achieved.

3,702,717
DRAWER GUIDE

Kenneth H. Gutner, 3285 Dato, Highland Park, Ill. 60035
Filed Mar. 4, 1971, Ser. No. 121,025
Int. Cl. F16c *29/00*
U.S. Cl. 308—3.6 **3 Claims**

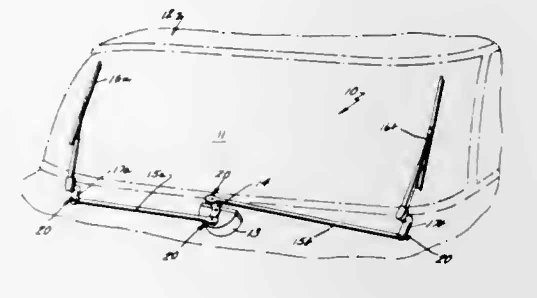


A drawer guide constituting the stationary element of a two element slide-facilitating arrangement for a dresser drawer, the guide being anchored to the dresser frame and including unique anchoring means including an edge-equipped integral upset portion.

3,702,718
BUSHING

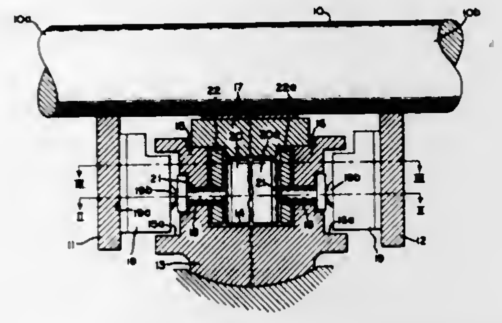
Donald E. Tassell, Grand Rapids, and Forest L. Middleton, Middleville, Mich., assignors to Lescoa, Inc., Grand Rapids, Mich.
Continuation-in-part of abandoned application Ser. No. 69,715, Sept. 4, 1970. This application Oct. 18, 1971, Ser. No. 190,005
Int. Cl. F16c *23/04*
U.S. Cl. 308—72 **12 Claims**

A bearing structure particularly adapted for connecting the extremity of one of the power transmission links of a windshield wiper system to a stud member secured near the extremity of a lever arm, the bearing structure permitting canting as well as rotational movement of the components with respect to one another. The bearing structure includes a cylindrical bearing member having an outer external spherical flange-like portion about its outer diameter. Two O rings positioned about the spherical portion cooperate to form a spherical seat for the flange. This assembly is retained on the link by means of a cap, suitable apertures being provided in the cap and link through which the axial extremities of the bearing protrude.



3,702,719
INTEGRATED JOURNAL AND THRUST BEARING

Herbert N. Hoffman, Lunenburg, Mass., assignor to General Electric Company
Filed Nov. 9, 1971, Ser. No. 197,077
Int. Cl. F16c *17/06*
U.S. Cl. 308—160 **3 Claims**

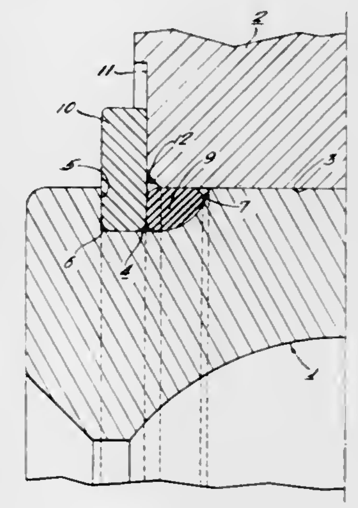


An integrated journal and thrust bearing incorporates a circumferential housing with an annular cutout portion therein extending radially outward from the inside circumference of the housing by which a pair of circumferential wall members are defined. A journal bearing assembly extends between the wall members at the inside circumference of the housing. At least one of the wall members has a plurality of circumferentially spaced apertures, each on an axis substantially parallel to the housing axis, within which are placed a plurality of thrust transmitting pins. At the outer surface of the wall member against each thrust pin is placed a tiltable thrust shoe. At the inner surface of the wall member against each pin is placed a leveling plate. A plurality of tiltable bridging leveling plates occupy the annular cutout area and serially rock in response to changes in thrust upon the thrust shoes in order to distribute the thrust throughout the apparatus.

3,702,720
DEVICE FOR THE APPLICATION OF ROLLING BEARINGS

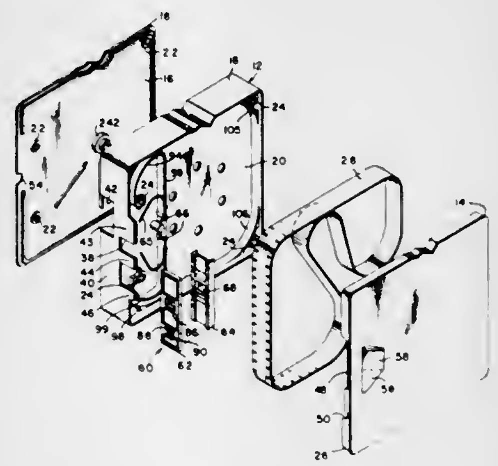
Stig Lennart Hallerback, Vastra Frolunda, Sweden, assignor to SKF Industrial Trading and Development Company, N.V., Overtoom, Amsterdam, Netherlands
Filed May 3, 1971, Ser. No. 139,626
Int. Cl. F16c *33/30*
U.S. Cl. 308—236 **4 Claims**

A device for the application of a rolling bearing intended to fix the bearing axially when mounted and to prevent so-called rolling of the bearing ring by its contact with the surface of the seat, characterized thereby that grooves of a specific shape have been provided near one or both of the side edges of the outer and/or inner periphery of the bearing race ring, whereby an annular member of a resilient material has been inserted in the part of the groove facing the center of the bearing, which member is intended to cooperate with the surface of the bearing seat under compression, and that in the same groove a ring of a rigid material is snapped, which ring is intended partly under compression to cooperate with said resilient member, and partly to fit against a supporting plane formed in connection to the surface of the bearing seat.



3,702,721
FILM PROJECTION SYSTEM

Ivars M. Skuja, Seattle, Wash., assignor to Audiscan Incorporated, Bellevue, Wash.
Continuation of application Ser. No. 653,256, July 13, 1967. This application May 11, 1970, Ser. No. 37,403
Int. Cl. G03d *31/06*
U.S. Cl. 353—19 **6 Claims**

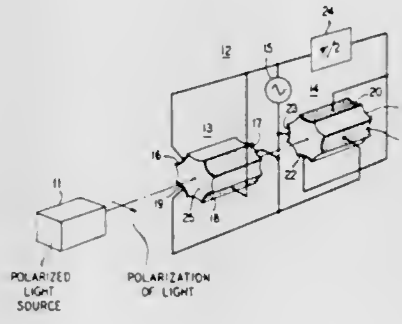


A film projection system employing a film and sound tape cartridge adapted to be inserted along a linear path into the projector for film projection and sound reproduction. Film advance is synchronized with the sound reproduction by recorded signals on the sound tape that control the film advance actuating mechanism.

3,702,722
ELECTRO-OPTIC QUADRUPOLE DEFLECTOR

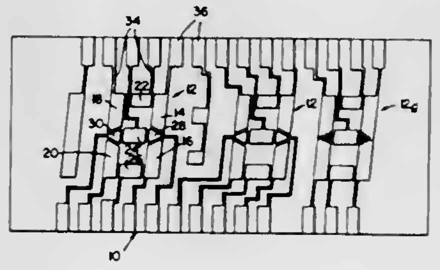
Ralph Francis Trambarulo, Red Bank, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.
Filed Oct. 26, 1971, Ser. No. 192,540
Int. Cl. G02f *1/26*
U.S. Cl. 350—150 **6 Claims**

The quadrupole electrodes in an electro-optic quadrupole light beam deflector are shaped to correspond to surfaces of constant potential in the electro-optic crystals and the lateral portions of the crystals between the electrodes are cut to correspond to lines of electric flux. In determining the surfaces and lines, account is taken of the anisotropic nature of typical electro-optic crystals such as potassium dihydrogen phosphate (KDP). The improvement provides significant reductions from prior art deflectors both in light beam distortion and power dissipation.



3,702,723
SEGMENTED MASTER CHARACTER FOR ELECTRONIC DISPLAY APPARATUS

Howard C. Borden, Jr., Atherton, Calif., assignor to American Micro-Systems, Inc., Santa Clara, Calif.
Filed Apr. 23, 1971, Ser. No. 136,829
Int. Cl. G09f *13/00*
U.S. Cl. 350—160 LC **8 Claims**

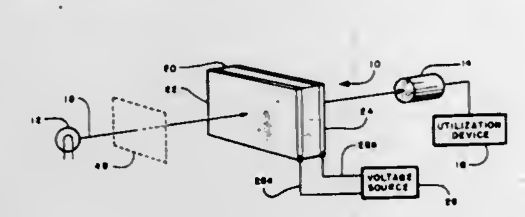


An improved highly readable character comprised of segments which can be energized in various combinations to define each of the arabic numerals in an electronic display apparatus. In one embodiment several characters are formed as thin film conductive members on the front plate of a liquid crystal display apparatus.

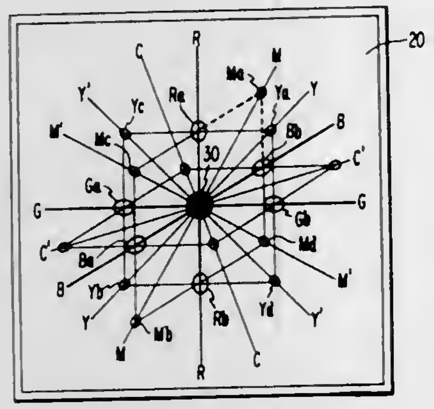
3,702,724
FERROELECTRIC CERAMIC PLATE ELECTRO-OPTICAL LIGHT SCATTERING DEVICE AND METHOD

Cecil E. Land and Willis D. Smith, Albuquerque, N. Mex., assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed Oct. 13, 1971, Ser. No. 188,880
Int. Cl. G02f *1/16*
U.S. Cl. 350—160 **10 Claims**

An electrooptic light scattering device and method comprising a chemically prepared, oxygen hot-pressed ferroelectric ceramic plate exhibiting longitudinal electrooptic scattering effects, optically transparent electrodes disposed on opposite surfaces of the plate, means for directing light against one of the electrodes towards the other electrode through the plate, and means for electrically varying the polarization of said plate between said electrodes and the amplitude of light scattering thereat together with the amplitude of light transmitted through said plate and electrodes, including such as a photoconductive layer sandwiched between one of said electrodes and said plate.



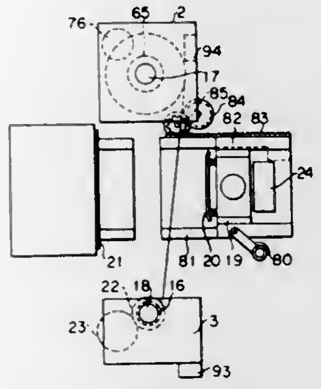
3,702,725
DECODING OF COLOR-ENCODED PHASE GRATING
Albert Macovski, Palo Alto, Calif., assignor to RCA Corporation
Filed Dec. 13, 1971, Ser. No. 207,208
Int. Cl. G02b *27/38*
U.S. Cl. 350—162.5 F **4 Claims**



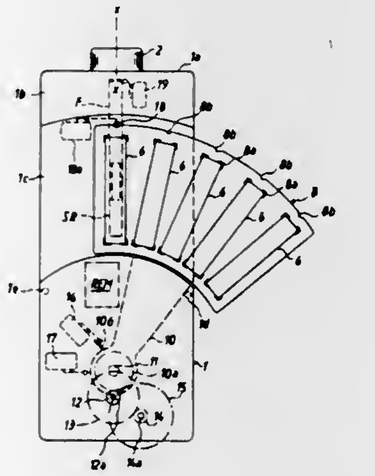
Apparatus is disclosed for reproducing a color image from a film on which the color image is diffraction coded by phase or thickness diffraction grating lines extending in different directions for respective different cyan, yellow and magenta subtractive primary colors. The apparatus includes a light source, a film plane, a Fourier transform plane and a utilization plane. A color filter located in the Fourier transform plane includes an opaque spot where undiffracted light from the source is imaged, two each of red, blue and green primary color filters at spots along radial axes orthogonal to the respective cyan, yellow and magenta gratings on the film, and cyan, yellow and magenta filters at spots along radial axes intermediate said red, blue and green axes, where sum and difference components of the red, blue and green components, taken two at a time, occur. The color image at the utilization plane is brightened by the cyan, yellow and magenta components, and can include saturated areas of these colors.

3,702,726
MOTION-PICTURE PROJECTOR FOR A FILM CONTAINED IN A CARTRIDGE
Morio Takeichi, Inazawa, and Kazuhiko Ogura, Nagoya, Japan, assignors to Elmo Company Limited, Mizuho-ku, Nagoya, Aichi Prefecture, Japan
Filed Oct. 6, 1970, Ser. No. 78,459
Int. Cl. G03b *23/02*
U.S. Cl. 352—72 **7 Claims**

A film cartridge comprises a film supply reel on which a roll of film can be wound with its trailing end secured thereto, a support for carrying said supply reel in a rotatable manner, and a film take-up core to which a leading end of the film roll can be secured. A motion-picture projector for a film contained in a cartridge. A film take-up core is disengaged from a support forming part of the cartridge and the take-up core together with the leading end of the film can pass through the film gate until it reaches a position where it can be rotated by a driving means for film winding, whereby the film can be threaded through its predetermined path.

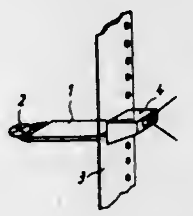


3,702,727
MOTION PICTURE PROJECTOR WITH MAGAZINE FOR FILM-CONTAINING CASSETTES
Rudolf Kremp, Grunwald, and Fridolin Hennig, Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Mar. 1, 1971, Ser. No. 119,518
Claims priority, application Germany, Mar. 19, 1970, G 70 10 064.0
Int. Cl. G03b *21/04*
U.S. Cl. 352—123 **10 Claims**



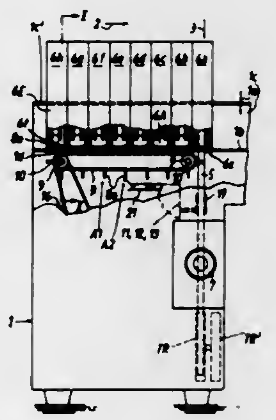
The housing of a motion picture projector for 8-millimeter film has a guide channel for an arcuate magazine provided with compartments for film-containing cassettes. The magazine is movable about an axis which coincides with or is normal to the optical axis of the projection lens, and the magazine can be mounted at a level above or below the optical axis. The means for indexing the magazine can be operated by hand or by a reversible electric motor whose polarity is automatically reversed when the magazine reaches the one or the other of its end positions. The detent mechanism which serves to yieldably hold the magazine in a selected angular position in which a selected cassette occupies the projection position can further serve to automatically arrest the motor for the indexing mechanism, and the film which is being rewound onto the supply reel in the cassette which occupies the projection position actuates a switch which starts the motor to automatically index the magazine by a step.

3,702,728
AUTOMATIC SWITCHING ARRANGEMENT FOR MOTION PICTURE FILM PROJECTORS
Alfred Winkler and Eduard Wagensonner, Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Dec. 18, 1970, Ser. No. 99,584
Claims priority, application Germany, Dec. 23, 1969, P 19 64 728.0
Int. Cl. G03b *21/50*
U.S. Cl. 352—92 **14 Claims**



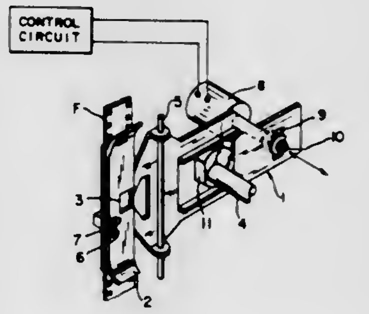
The varying intensity of the light passing through the exposed portion of a film causes a constantly changing voltage in a circuit having a photosensitive element, such as a phototransistor. This varying voltage operates a threshold switch, such as a thyristor, to switch the projector automatically from high threading speed to projection speed.

3,702,729
MOTION PICTURE PROJECTOR FOR USE WITH FILM-CONTAINING CASSETTES
Rudolf Kremp, Grunwald, and Alfred Winkler and Fridolin Hennig, Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Mar. 12, 1971, Ser. No. 123,530
Claims priority, application Germany, Mar. 14, 1970, P 20 12 282.1
Int. Cl. G03b *21/04*
U.S. Cl. 352—123 **26 Claims**



The housing of a motion picture projector is formed with a channel for a set of closely adjacent cassettes each of which contains a supply reel for convoluted motion picture film. The cassettes are movable stepwise by an advancing mechanism serving to place successive cassettes into a projection position in which the film is automatically drawn from the respective supply reel, the images of its frames projected onto a screen, and thereupon returned into the cassette, either while the cassette dwells in the projection position or while the cassette dwells in a rewinding position immediately downstream of the projection position. The motor for the advancing mechanism is started in response to tensioning of film during the last stage of withdrawal from the cassette occupying the projection position, and the motor is arrested by a portion of the advancing mechanism when the transport of cassettes by a step is completed.

3,702,730
ELECTRONICALLY CONTROLLED VARIABLE RATE FILM FEEDING MECHANISM FOR MOTION PICTURE PROJECTORS
William C. Russell, Bethlehem, Conn., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 12, 1971, Ser. No. 133,059
Int. Cl. G03b *1/22*
U.S. Cl. 352—191 **4 Claims**

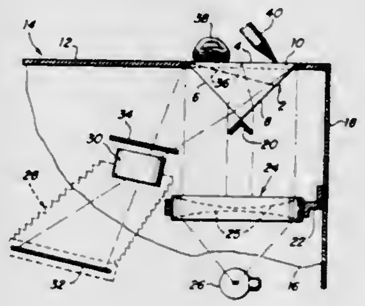


In a film feeding mechanism for a motion picture projector of the type having a film claw mounted for up-and-down movement in a film advancing direction and in-and-out movement in a film engaging and disengaging direction relative to a film to advance the film through the projector, the in-and-out movement being effected intermittently by a solenoid. The control circuit for the solenoid includes a variable oscillator producing a signal the frequency setting of which determines the frequency of the in-and-out movement of the claw, and hence the rate of film advance, during continuous constant-speed reciprocation of the claw in the up-and-down direction. The oscillator may control the circuit through an electronic switch controlled by the oscillator, and timing of the solenoid action relative to the claw position is effected by a timing switch or switches, preferably cam operated.

ERRATUM

For Class 353—19 see:
Patent No. 3,702,721

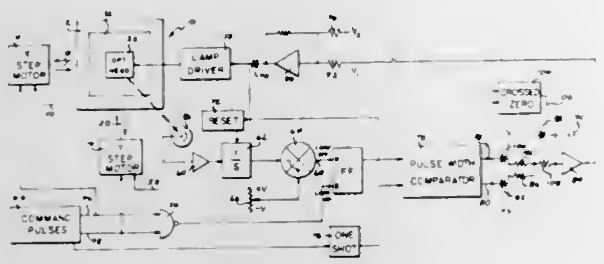
3,702,731
APPARATUS FOR RECORDING OR VIEWING SKIN RIDGE PATTERNS
John W. Wood, Jr., Newton, Mass., assignor to Group 128, Incorporated
Filed July 21, 1970, Ser. No. 56,934
Int. Cl. G03b *27/16*
U.S. Cl. 355—18 **14 Claims**



Apparatus for recording or viewing fingerprints comprising a prism, a light source for illuminating the prism, and means focused so as to provide images for recording or viewing purposes of the prints of fingers placed into optical contact with a surface of the prism.

3,702,732
EXPOSURE CONTROL APPARATUS AND METHOD UTILIZING TIME VS INTENSITY TRADEOFF SERVO SYSTEM

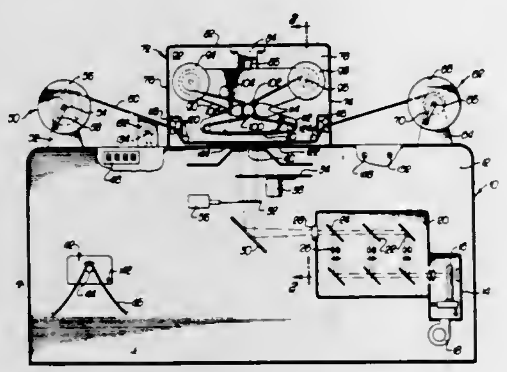
Joseph J. Sliwkowski, Framingham, Mass., assignor to Computervision Corporation, Burlington, Mass.
Filed May 5, 1971, Ser. No. 140,344
Int. Cl. G03b *27/78*
U.S. Cl. 355—68 **9 Claims**



An exposure control apparatus and method which utilizes a time vs. lamp intensity tradeoff servo system. The lamp intensity is regulated by the servo system to provide the minimum amount of lamp drive or intensity that will produce a predetermined exposure within the available exposure time. A two state gain adjustment is employed in the servo system to permit rapid convergence at a high gain and then a controlled, and small ripple of light intensity at a lower gain. The servo system automatically compensates for lamp intensity decay during lamp aging without requiring a high initial power drive.

3,702,733
PRINT COLOR AND INTENSITY CORRECTION METHOD

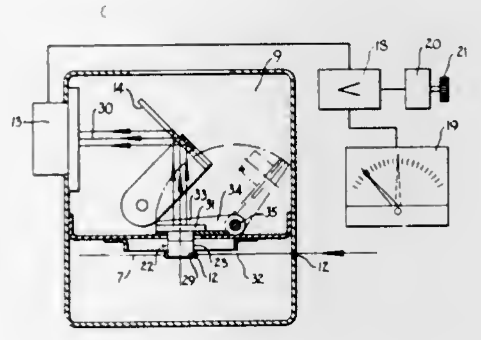
Leonard L. Sokolow, Encino, Calif., assignor to Consolidated Film Industries, a division of Republic Corporation, Hollywood, Calif.
Original application June 20, 1969, Ser. No. 835,200. Divided and this application Sept. 25, 1970, Ser. No. 75,712
Int. Cl. G03b
U.S. Cl. 355—77 **8 Claims**



A method of preparing an abbreviated color print and utilizing the same for comparison and correction purposes in finalizing the selection of scene-to-scene printing light compositions for printing a motion picture embodying a series of multiframe color scenes. Selected frames from the scenes of the negative are printed according to the judgment of the operator, resulting in a print but a small fraction of the length of the negative. This abbreviated print is viewed for overall color balance and density, and the printing light composition as to each scene is confirmed or corrected. The data resulting is used in programming a printer for the printing of the full length picture.

3,702,734
CALIBRATION MEANS FOR INSTRUMENT FOR READING DUST ACCUMULATIONS ON DARK SLIDES

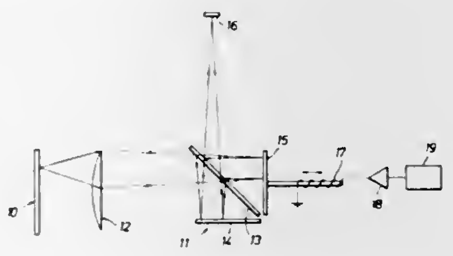
Bo Oscar Lindahl, Seth Eric Valentin Lamme, and Sven Josef Harry Hallenrud, Jonkoping, Sweden, assignors to Saab-Scania Aktienbolag, Linkoping, Sweden
Filed May 3, 1971, Ser. No. 139,744
Int. Cl. G01n *1/00, 21/00, 21/16*
U.S. Cl. 356—38 **4 Claims**



An instrument for measuring dust accumulation on a dark slide, of the type disclosed in U.S. Pat. No. 3,526,461, is calibrated before each use with a calibration means mounted in it for movement between a calibrating position at the location to be occupied by slides and an out-of-the-way position. The calibration means comprises means for reflecting toward the photocell of the instrument a portion of the light shone across slides, and precalibrated means for controlling the amount of such reflected light that strikes the photocell.

3,702,735
MULTISPECTRAL IMAGING SYSTEM

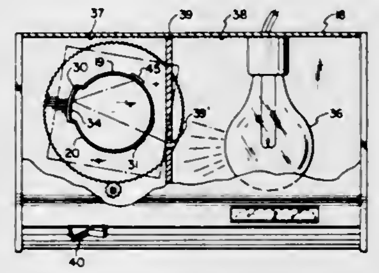
Andrew E. Potter, Jr., Houston, Tex., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed May 12, 1971, Ser. No. 142,662
Int. Cl. G01b *9/02;* **G01n** *21/34*
U.S. Cl. 356—106 S **4 Claims**



A system is disclosed for producing multiple images of a scene where the image is viewed from a single optical system and converted to separate displays at different light wavelengths. All the images are produced simultaneously. The embodiment disclosed includes a Michelson interferometer which transmits the light intensity to a mosaic of independent light detectors. The detectors are independently coupled to an analog to digital converter which digitizes the electrical response of the detectors. The digital signals are processed in a Fourier transform unit to provide signals as a function of wavelength. The signals from the unit are stored in a memory unit and selected by a scanner unit as a function of wavelength and the increment of the detector mosaic and applied to a display device. By virtue of the wavelength selection, different display devices are operated at different wavelengths to display the image at the selected wavelength.

3,702,736
SPECTROPHOTOMETER

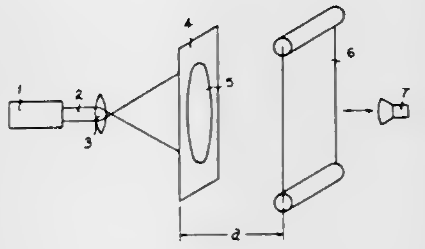
John C. Coggeshall, 8662 E. Gregory Lane,
Des Plaines, Ill. 60016
Filed June 18, 1971, Ser. No. 154,316
Int. Cl. G01j *3/18, 3/42*
U.S. Cl. 356—96 **2 Claims**



A spectrophotometer is disclosed wherein light from a source of light is directed through a liquid to be analyzed, and the light is reflected from a diffraction grating to provide a spectrum of light which is then caused to selectively impinge on a photocell to thereby give an indication of the absorption characteristics of the liquid.

3,702,737
METHOD OF AND ARRANGEMENT FOR EXAMINING MOVING OBJECTS BY COHERENT LIGHT

Francois Mottier, Zurich, Switzerland, assignor to Aktiengesellschaft Brown Boveri & Cie, Baden, Switzerland
Filed Dec. 30, 1970, Ser. No. 102,697
Claims priority, application Switzerland, Jan. 21, 1970, 793/70
Int. Cl. G01b *9/02, 11/30;* **G01d**
U.S. Cl. 356—109 **9 Claims**

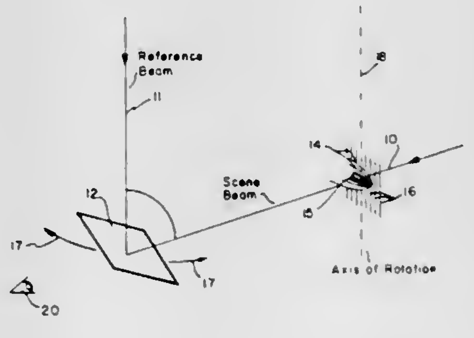


A method of examining a moving object by utilization of coherent light in which the laser produced light is directed onto a diffuser to establish a luminous area of randomly scattered light which then serves to illuminate the surface of the object. Points at rest on the surface of the illuminated object will appear coarsely speckled whereas the speckles will become blurred for those points on the surface which are in movement. By varying the ratio of the luminous area on the diffuser to the distance between said area and the object to be examined, variation of the sensitivity of the method is possible.

One suitable arrangement by which the method can be performed includes a laser, a lens for expanding the beam of coherent light produced by the laser, an opal glass plate illuminated by the expanded laser beam and the object to be examined illuminated from the opal glass plate. The opal glass plate which functions as a diffuser is located at a distance from the object which is variable so that the ratio of the luminous area which serves as the source of diffusely scattered light for illumination of the object to said distance is adjustable.

3,702,738
HOLOGRAPHIC INTERFEROMETRIC SYSTEM FOR GENERATING FINITE FRINGES

Lee Opert Teflinger, Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed June 23, 1971, Ser. No. 155,695
Int. Cl. G01b *9/02*
U.S. Cl. 356—109 **6 Claims**

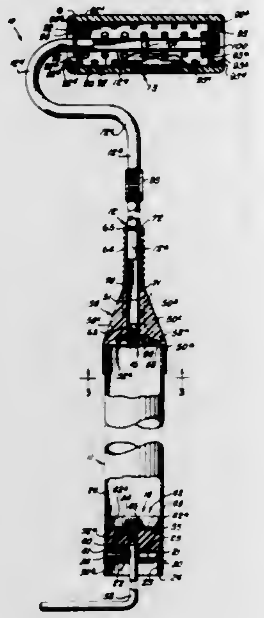


A double exposure holographic system including means for generating finite fringes at the plane of an object. The holographic system is generally conventional and a double exposure is taken first of the object to be recorded and then of the displaced or perturbed object. Between exposures the recording medium on which the hologram is to be recorded is rotated through an axis which passes approximately through the object. The angle between subject and reference beams may be large, that is, between approximately 60° and 90°. Generally, the axis through which the recording material is rotated is approximately parallel to the reference beam or else it may be orthogonal to both reference and subject beams. The fringes are parallel to the axis of rotation, and can be made to focus in the plane of the object permitting high resolution readout.

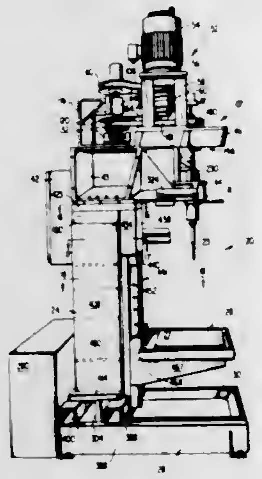
3,702,739
PAINT ROLLER

James M. Rentfrow, P.O. Drawer 340,
Royse City, Tex. 75089
Filed Mar. 11, 1971, Ser. No. 123,143
Int. Cl. B44d *3/28*
U.S. Cl. 401—197 **10 Claims**

A paint applicator assembly of the roller type including an integral paint reservoir-handle having a paint filling and dispensing piston manually operable from one end of the reservoir and a paint conducting tube supporting a hollow roller applicator connected with the other end of the reservoir. The roller supporting tube is telescopically connected into the handle by means including a valve for controlling flow between the reservoir-handle and the tube for both filling and dispensing of the paint. The tube is spring biased to a valve-closed position. An alternate form of the apparatus has a filling slot in the reservoir wall for pouring paint directly into the reservoir-handle. Various forms of rollers are shown including a special roller for painting pipes. Paint is introduced into the reservoir through either the filling slot or by drawing the paint in through the tube upon retraction of the piston. While holding the valve open, paint is forced by the piston through the tube into the roller. The roller is rolled along the surface to be painted in a conventional manner.



3,702,740
DRILL PRESS WITH COOLANT MEANS
David D. Pettigrew, Gibsonia, Pa., assignor to Rockwell Manufacturing Company, Pittsburgh, Pa.
Filed Apr. 13, 1970, Ser. No. 27,786
Int. Cl. B23b *39/00, 47/14, 47/18*
U.S. Cl. 408—56 **27 Claims**

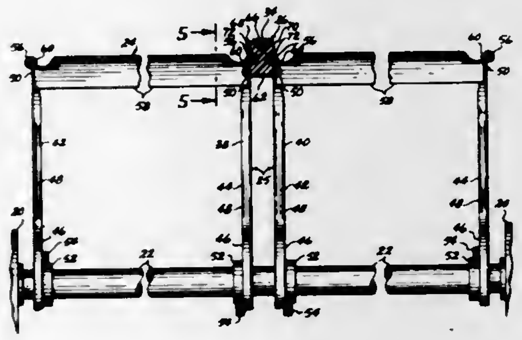


An oil-hole drill press having an infinitely variable speed spindle drive system and a hydraulically operated, infinitely variable rate feed system for rotating a drill and feeding it into a workpiece at a selected high speed and feed rate substantially equal to the maximum cutting speed of the metal of the workpiece for acceptable tool life. The spindle structure includes driving and driven spindles rotatable together, with the driven one being axially slidable within the driving spindle, and both spindles include passagesways through which an oil coolant is supplied to the tip of the drill bit through an axial-through passage.

An hydraulic system pumps high pressure coolant oil to the driving spindle and recirculates spent coolant from a removable chip pan assembly at the base of the machine to a main coolant supply tank.

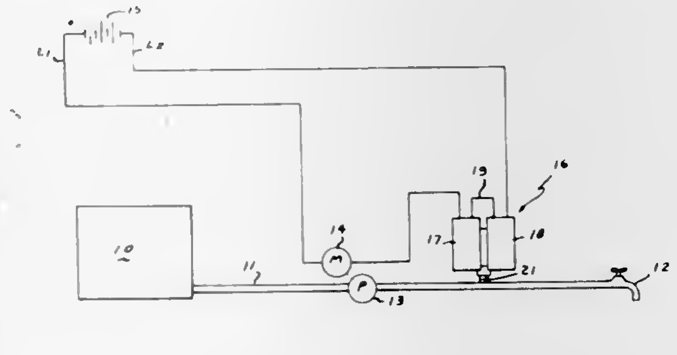
The drill press includes a steel fabricated C type column structure of extreme rigidity, the upper spindle support arm of which is capable of withstanding high thrust and torque loads imparted to the drill bit and spindle during operation of the drill bit at the maximum predeterminable feed penetration rates and rotational speeds for the metal of the workpiece.

3,702,741
ROTOR FOR A BLOWER STRUCTURE
Adam D. Goettl, 4960 E. Palomino Drive,
Phoenix, Ariz. 85018
Filed Apr. 12, 1971, Ser. No. 133,188
Int. Cl. F16h *55/46*
U.S. Cl. 416—187 **5 Claims**



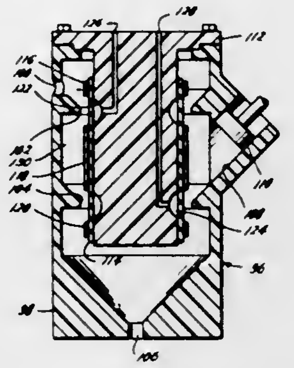
A blower structure is disclosed in which the rotor thereof includes an impeller with a pulley means demountably attached to the periphery thereof.

3,702,742
WATER PRESSURE AND LIKE SYSTEMS
Linus E. Russell, Springfield, Ohio, assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Mar. 29, 1968, Ser. No. 717,342
Int. Cl. F04b *49/00*
U.S. Cl. 417—25 **2 Claims**



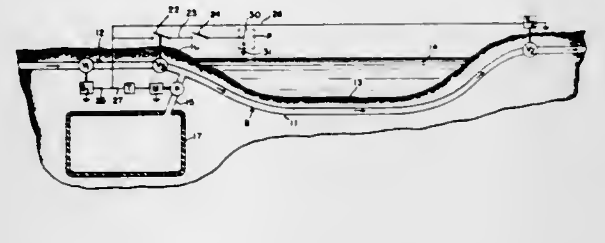
A water pressure or like system for supplying fluid from a selected source to a place of use characterized in preferred embodiments by pressure sensing means selectively responding to predetermined high and low pressure conditions in the flowing fluid to selectively cause an interruption of the flow or to energize the flow, there being further sensing means to deenergize the system when the source of fluid reaches a diminished level of supply.

3,702,743
CONTACT PROCESS AND APPARATUS
Hart Brown, 5300 Brownway Road,
Houston, Tex. 77027
Original application Jan. 31, 1968, Ser. No. 701,906. Divided and this application Sept. 4, 1970, Ser. No. 69,817
Int. Cl. F04b *43/10, 45/00, 7/00, 21/02, 39/10*
U.S. Cl. 417—53 **4 Claims**



This specification discloses a process and apparatus for providing intimate countercurrent contact between solid particles and a fluid wherein such process may be operated as a continuous process by utilizing two columns with the solid particles being moved downwardly in one column and upwardly in the other column and also includes apparatus for transferring solid particles between columns and apparatus for providing intimate contact between the solid particles and the fluids in each column.

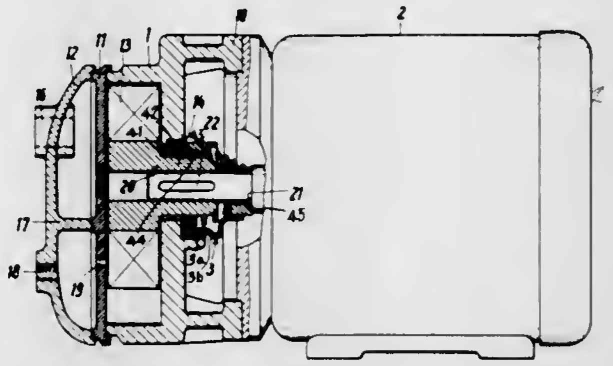
3,702,744
OIL TRANSPORTATION SYSTEM
Byron T. Brown, 1818 S. 16th St., Phoenix, Ariz. 85034, and B. Stahmer, % Industrial Electrical Works Inc., 1509 Chicago St., Omaha, Nebr. 68102
Filed Apr. 14, 1971, Ser. No. 133,900
Int. Cl. F04b *49/00*
U.S. Cl. 417—12 **8 Claims**



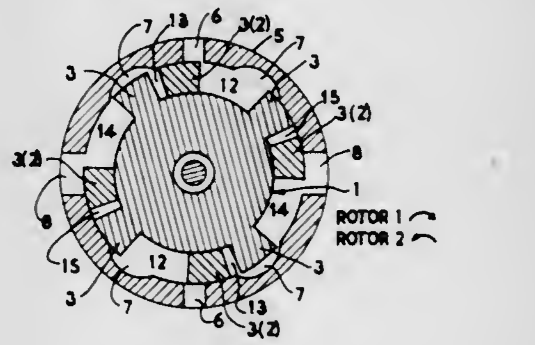
An oil transportation pipeline system includes a shutoff valve arrangement for automatically isolating a leaking inaccessible line section such as a section buried in a river crossing and rapidly withdrawing oil from the isolated section into a container to protect the environment.

3,702,745
LIQUID PISTON ROTARY GAS PUMP ASSEMBLY
Udo Segebrecht, Heiligenstedten, Germany, assignor to Siemen & Hinsch mbH, Itzehoe-Holstein, Germany
Filed Jan. 26, 1971, Ser. No. 109,907
Claims priority, application Germany, Jan. 31, 1970, P 20 04 393.0
Int. Cl. F04c *19/00;* **F04b** *17/00, 35/04;* **F01d** *11/08*
U.S. Cl. 417—68 **6 Claims**

The invention relates to a liquid piston rotary gas pump assembly which comprises, on one hand, a liquid piston gas pump including a rotor and a casing, and, on the other, a flanged motor, and wherein the casing of the pump is mounted to the flange of the motor, the hub of the rotor is supported by the stub shaft of the flanged motor and a dynamic axial seal member serves as a seal between the shaft and the pump casing.



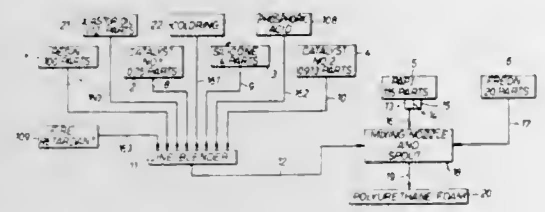
3,702,746
ROTARY FREE PISTON GAS GENERATOR
James K. Parmerlee, 3620 Lueman Drive,
Indianapolis, Ind. 46236
Filed Nov. 1, 1971, Ser. No. 194,192
Int. Cl. F04c *21/00*
U.S. Cl. 417—481 **8 Claims**



A gas generator having double acting free pistons, movably interconnected for opposing movement which achieves dimensional change of a combustion chamber, and operating in oscillating rotary rather than linear motion, for supplying high pressure and/or temperature gas either to processes requiring it or directly into a turbine, an engine, or other device to provide power for power stations or vehicles (such as automobiles, boats, aircraft, or motorcycles).

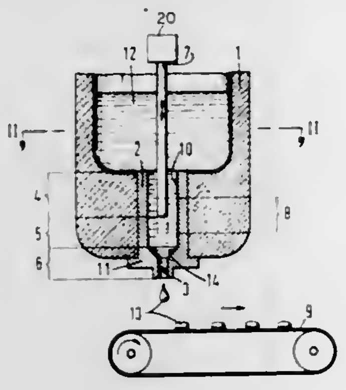
3,702,747
APPARATUS FOR PRODUCING ISOTROPIC FOAMED STOCK
Lawrence C. Porter, Palos Verdes Peninsula, and Kenneth E. Graves, Saratoga, Calif., assignors to The Upjohn Company, Kalamazoo, Mich.
Original application Jan. 30, 1968, Ser. No. 701,596, now Patent No. 3,606,903. Divided and this application Nov. 18, 1970, Ser. No. 90,500
Int. Cl. B29d *27/04*
U.S. Cl. 425—4 **16 Claims**

An improved one-shot system for producing polyurethane foam stock and the like, including separate tank means containing different liquid reactants, separate mixing means for combining reactants, separate reactant delivering means, measurement circuits for deriving measurements of parameters such as the mass transfer rate of each reactant, and further including an automatic controller system responsive to such measurements for adjusting and controlling the parameters with respect to preselected values. A controller system is provided for continuously sampling the various incoming measurement signals sequentially, and for deriving error signals from a comparison of various functional relationships of the samples relative to pre-established optimums. Control circuits are also included for continually adjusting the operation of the system in response to the error signals.



3,702,748
APPARATUS FOR THE PRODUCTION OF PELLETS FROM A MELT

Uwe Storb, Krefeld, and Herbert Kaiser and Gunter Kaiser, Krefeld-Uerdingen, Germany, assignors to Gebr. Kaiser, Maschinenfabrik, Krefeld-Uerdingen, Germany
Filed Aug. 3, 1970, Ser. No. 60,378
Claims priority, application Germany, Aug. 16, 1969, P 19 41 460.9
Int. Cl. B29c *23/00*
U.S. Cl. 425—6 **8 Claims**

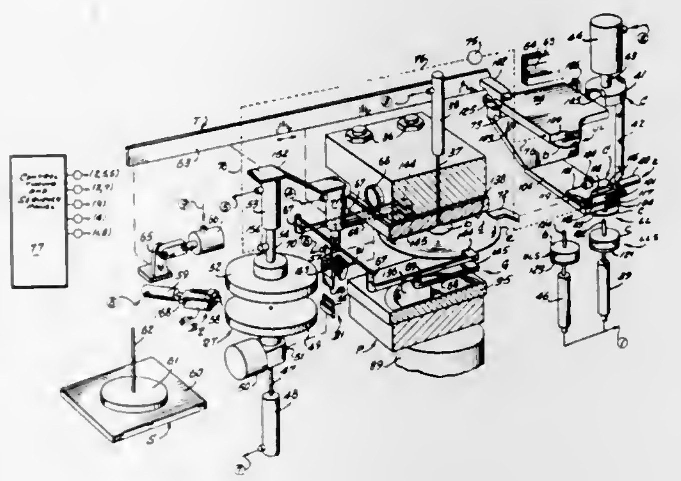


For producing pellets from liquid material the liquid is placed in a vessel with at least one nozzle in its bottom. In order to aid flow of liquid from the nozzle a vertically reciprocating plunger or needle is provided above the nozzle orifice.

3,702,749
APPARATUS FOR MANUFACTURING DISC RECORDS

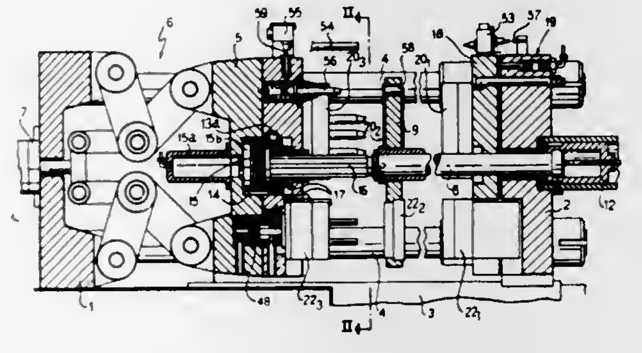
Joseph Flusfeder, 93 Cromwell Court, Berkeley Heights, N.J. 07922, and Leonard Palmer, 22 Lakeview Ave., Florham Park, N.J. 07932
Application June 27, 1968, Ser. No. 752,090, now Patent No. 3,529,322, which is a division of application Ser. No. 466,167, June 23, 1965, now Patent No. 3,412,427. Divided and this application June 25, 1970, Ser. No. 49,706
Int. Cl. B29d *17/00*
U.S. Cl. 425—109 **17 Claims**

A disc record manufacturing apparatus including a press capable of pressing a cake into a record as well as pressing labels into the opposed faces of the record. In advance of the press is a cake-molding means which receives a charge from an extruder and which molds the charge into a cake. There is situated in the region of the cake-molding means an assembly for holding labels which are positioned with respect to the cake in such a way that transfer means can transfer the cake and the labels into the press when the latter is open with the labels and cake oriented with respect to each other in such a way that they will be suitably joined together during the pressing of the cake into a record.



3,702,750
MACHINE FOR FORMING THERMOPLASTIC RESIN PARTS BY INJECTION MOULDING

Giovanni Bessolo Veneria, Turin, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Turin, Italy
Filed Nov. 13, 1970, Ser. No. 89,380
Claims priority, application Italy, Nov. 14, 1969, 54,028/69
Int. Cl. B29c *9/00*
U.S. Cl. 425—130 **9 Claims**

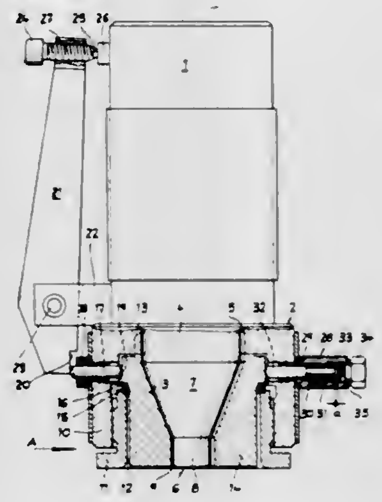


A machine and method for injection molding thermoplastic resin parts having a mold and transfer plate means mounted to transfer parts from the mold to a part separation station where at ejection means separate the parts from the plate means simultaneously with injection of resin into the mold. The method and machine further contemplates part molding in two or more colors where a partially finished product is molded at one station, a modified product is molded at a second station, the modified product ejected at a part separation station and transfer to a succeeding station of each part is effected in between simultaneous injection of resin at the first and second stations and ejecting the part from the part separation station.

3,702,751
DIEHEAD

Gottfried Mehnert, Berlin, Germany, assignor to Bekum Maschinenfabriken G.m.b.H., Berlin, Germany
Filed May 10, 1971, Ser. No. 141,827
Claims priority, application Germany, May 12, 1970, P 20 23 008.4
Int. Cl. B29f *3/04*
U.S. Cl. 425—190 **10 Claims**

A diehead for a plastic extrusion apparatus has an inner annular member provided with a central passage which accommodates a core and defines with the same an annular extrusion clearance for plastic material. An outer annular member surrounds the inner annular member with clearance so that the inner annular member is movable in a plane transverse to the longitudinal axis of the passage within the limitations imposed by this clearance to thereby vary the cross-section of the extrusion passage. One or more adjusting arrangements are provided, each composed of a biasing device located at one circumferential point of the outer annular member and directing upon the inner annular member, and a displacing device located at a point opposite the biasing device and operative for displacing the inner annular member with reference to the outer annular member against the opposition of the biasing device.



CHEMICAL

3,702,752
PROCESS FOR TRANSFER DYEING OF SYNTHETIC TEXTILE MATERIALS

Christopher James Bent, Terence David Flynn, and Brian Glover, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Dec. 23, 1969, Ser. No. 887,750
Claims priority, application Great Britain, Jan. 15, 1969, 2,427/69
Int. Cl. D06p *3/54*
U.S. Cl. 8—2.5 **3 Claims**

Process for colouring synthetic textile materials which comprises applying a water-insoluble dyestuff to the textile material which is then subjected to a dry heat treatment at a pressure less than atmospheric pressure.

3,702,753
PAD BATH FORMULATION OF IRON SALT, AMMONIUM OXALATE AND ZIRCONYL AMMONIUM CARBONATE

Charles J. Conner, Metairie, La., assignor to the United States of America as represented by the Secretary of Agriculture
No Drawing. Original application May 19, 1970, Ser. No. 38,900, now Patent No. 3,671,178. Divided and this application Mar. 21, 1972, Ser. No. 236,591
Int. Cl. C09b *61/00*
U.S. Cl. 8—52 **3 Claims**

Orange to brown mineral dyeings are conventionally prepared from two bath systems, where the fabric is wetted with one bath containing an iron salt, and then wetted with another bath containing alkali, to cause the colored iron oxide to deposit in the fabric as a mineral dye. This has been necessary up to now, since it has been chemically incompatible to have the iron in the same alkaline bath with the alkali. This invention demonstrates that a heat decomposable complex of the iron, with or without manganese, can be compatible with alkaline zirconyl ammonium carbonate solutions in the same bath, when cellulosics can be wetted in this bath, and subsequently mineral dyed by heat curing, when the complex of iron decomposes to deposit iron oxide with zirconia, the zirconyl ammonium carbonate decomposing at the same time to deposit zirconia. When heptavalent manganese ($KMnO_4$) is incorporated into the bath with the complexed iron, it is soluble and compatible, producing manganese dioxide (MnO_2) by reduction products from the iron complex, resulting in various shades or orange to brown with the iron oxide and zirconia also deposited. This process makes it possible to deposit orange to brown wash-fast mineral dyeings from a single bath. The deposited zirconia attributes a degree of water repellency and algaecidal resistance to the fabric, and a copper or phenyl-mercury salt can be incorporated into the zirconyl ammonium carbonate component of the system to deposit a fungicidal mineral dye of orange to brown shade on heat curing, making it possible to apply an iron and/or manganese mineral dye with or without fungicide from a single bath, reducing conventional dyeing procedures from two or more baths, to a single bath requiring only a simple pad, dry, and cure procedure to effect the dyeing. The fabrics are not seriously tendered, and the residual by-product salts may or may not be removed by washing, since the fabric is not stiffened by their presence and the dyed colors are unaffected on standing.

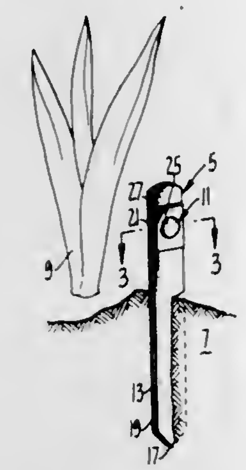
3,702,754
FIBROUS (CARBOXYALKYLTHIO)- AND (CARBOXYARYLTHIO) CHLORODEOXYCELLULOSES AND METHOD OF PREPARATION

Tyrone L. Vigo, New Orleans, and Matthew F. Margavio and Clark M. Welch, Metairie, La., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed Jan. 26, 1971, Ser. No. 109,962
Int. Cl. D06m *13/26, 13/22, 13/54*
U.S. Cl. 8—120 **21 Claims**

The preparation of cellulosic yarns and fabrics having 0.6–11% of the cellulosic hydroxyl groups replaced by chlorine atoms, and a further 0.3–9% of the hydroxyl groups replaced by carboxyalkylthio or carboxyarylthio groups, in addition to appreciable cellulose crosslinking, leads to textiles of increased wrinkle recovery in the wet state, increased affinity for moisture and metal ions, enhanced affinity for basic dyes, and increased resistance to cellulose solvents. The cellulosic textile is first converted to chlorodeoxycellulose in textile form by reaction with thionyl chloride in dimethylformamide at 20–30° C., and is subsequently reacted with mercapto-substituted carboxylic acids at temperatures of 50–110° C., in the presence of sufficient alkali metal hydroxide to convert both the mercapto- and carboxylic acid groups to their anionic forms, in a solvent consisting of mixtures of straight chain aliphatic alcohols with water, to replace some of the chlorine atoms by carboxyalkylthio- or carboxyarylthio-groups.

3,702,755
MOISTURE INDICATOR FOR PLANTS

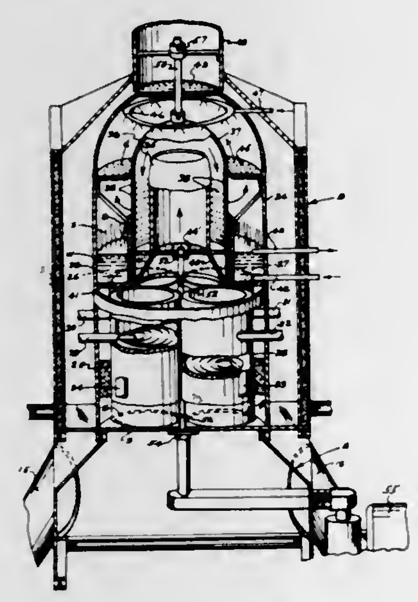
Walter E. Palmer, 501 Oxford St.,
San Francisco, Calif. 94134
Filed July 21, 1971, Ser. No. 164,537
Int. Cl. G01n *31/06, 31/22*
U.S. Cl. 23—253 TP **1 Claim**



A moisture indicator for plants which may be placed in the soil adjacent to a plant to indicate the plant's need for water before the plants themselves begin to indicate their need by wilting. The indicator is particularly useful for house plants which are frequently underwatered or overwatered and it provides a positive visual indication of a plant's need.

3,702,756
SMOKELESS ANTITOXIC BURNER APPARATUS

Vernon D. Bowman, 5625 Coach and Four Drive E.,
Apt. I, Kettering, Ohio 45440
Continuation of application Ser. No. 18,551, Mar. 11, 1970. This application Jan. 6, 1971, Ser. No. 104,487
Int. Cl. B01d *47/06*
U.S. Cl. 23—277 C **9 Claims**



An apparatus for burning and scrubbing exhaust gases, smoke and similar waste products and solid particles carried thereby and preventing their discharge into the atmosphere. The apparatus consists of one or more burner chambers through which the gases to be purified are forcibly conducted and the combustible products consumed, a second chamber having tortuous passage wherein the gases are forced and therein subjected to steam and water sprays to remove solids and soluble constituents and an exhaust to the atmosphere for the purified gases.

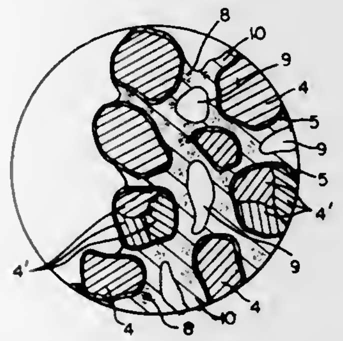
3,702,757
PHOSPHATE ESTER AMINE SALTS USEFUL AS FUEL DETERGENTS AND ANTI-ICING AGENTS

Enver Mehmedbasich, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Continuation-in-part of application Ser. No. 817,288, Apr. 16, 1969, which is a continuation of abandoned application Ser. No. 621,796, Mar. 9, 1967. This application Feb. 3, 1971, Ser. No. 112,478
Int. Cl. C10l *1/18, 1/22, 1/26*
U.S. Cl. 44—58 **15 Claims**

Hydrocarbon substituted alkylene polyamines which are partially neutralized with mono- or dialkyl phosphates are taught for use in fuels as detergents, anticorrosive and deicing agents. The hydrocarbon substituents are free of aromatic unsaturation and are from about 30 to 300 carbon atoms. The alkylene polyamines have from 2 to 6 nitrogen atoms.

3,702,758
MAGNETIC CHIPS FOR BARREL FINISHING AND PROCESS FOR PRODUCING THE SAME

Sakae Fukui, Tokyo, and Hisamine Kobayashi, Nagoya, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan
Continuation-in-part of application Ser. No. 733,146, May 29, 1968. This application Sept. 10, 1970, Ser. No. 71,220
Claims priority, application Japan, June 1, 1967, 42/34,462
Int. Cl. C08g *51/12*
U.S. Cl. 51—298 **9 Claims**



This invention relates to hardened magnetic chips for use in barrel-finishing of metal bodies formed by pressing or die-casting, and to a process for producing such chips. The disclosed magnetic chips are substantially in a granular form and have high magnetic and high abrasive properties, substantially comprising a powdery magnetic material, a medium selected from the group consisting of a metal compound aqueous solution and an acid denatured alumina, and a laminating hardening agent containing at least one selected from the group consisting of kaolin, clay, frit, lime and boric acid, said powdery magnetic material being coated wtih said laminating hardening agent through said medium.

3,702,759
HERBICIDE RESISTANT CORN SEED METHOD

Otto L. Hoffmann, Shawnee, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Continuation-in-part of application Ser. No. 770,856, Oct. 25, 1968, now Patent No. 3,564,768. This application May 27, 1970, Ser. No. 41,068
Int. Cl. A01n *21/02*
U.S. Cl. 71—77 **2 Claims**

Corn is protected from injury by N,N-dialkylthiocarbamate ester pre-emergent herbicide and also a number of other herbicides as for example, 3-amino-2,5-dichlorobenzoic acid and 2-chloro-2',6'-diethyl-N-(methoxymethyl)-acetanilide by coating the corn seeds prior to planting with 1,8-naphthalic anhydride, the free acid or lower alkyl naphthalate esters or naphthalate salts in combination with an effective amount of S-(2-propynyl)thiosemicarbazide. The combination of seed treating compounds alleviates the growth retarding effect of the naphthalic compounds when used alone.

3,702,760
USE OF 2,6 - DI-TERT-BUTYL-4-METHYLPHENYL N - DICHLOROACETYL-N-METHYLCARBAMATE AS A HERBICIDE

Albert H. Haubein, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.
No Drawing. Original application Apr. 19, 1968, Ser. No. 722,553, now Patent No. 3,531,515. Divided and this application June 3, 1970, Ser. No. 54,028
Int. Cl. A01n *9/24*
U.S. Cl. 71—106 **5 Claims**

Disclosed is the use of 2,6-di-t-butyl-4-methylphenyl N-dichloroacetyl-N-methylcarbamate as a preemergence herbicide for annual weedy grasses in rice fields.

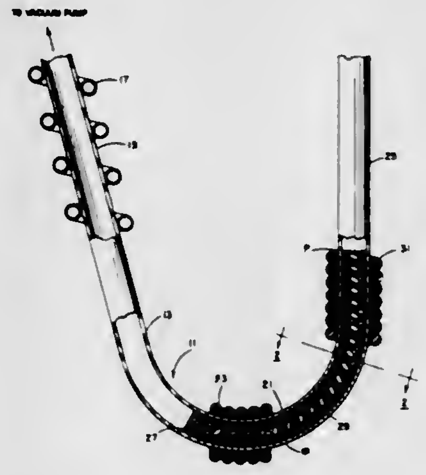
3,702,761
CARBONYL NICKEL POWDER AND PRODUCTION THEREOF

David Myers Llewelyn, Swansea, Wales, assignor to The International Nickel Company, Inc., New York, N.Y.
Filed July 2, 1971, Ser. No. 159,258
Claims priority, application Great Britain, July 7, 1970, 32,959/70
Int. Cl. B22f *9/00*
U.S. Cl. 75—.5 AA **8 Claims**

Nickel carbonyl is thermally decomposed to nickel powder or pellets in the presence of nitric oxide, nitrogen trioxide or nitrogen peroxide in concentrations of 1–5000 p.p.m. or more. By suitable choice of gas concentrations and temperatures in the range 230–350° C. the powder can be produced with substantially spherical particles or with low carbon content or both.

3,702,762
METHOD FOR DISTILLATION OF LIQUIDS

George M. Low, Acting Administrator of the National Aeronautics and Space Administration, with respect to an invention of Algerd Basiulis, Redondo Beach, Calif., and Paul K. Shefsiek, Acton, Mass.
Original application Jan. 11, 1968, Ser. No. 697,075, now Patent No. 3,563,727, dated Feb. 16, 1971. Divided and this application Dec. 14, 1970, Ser. No. 97,829
Int. Cl. C22b *9/04, 27/00;* **B01d** *3/10*
U.S. Cl. 75—66 **7 Claims**



Method for distillation of materials including liquid metals having at least one U-shaped tube with one upstream end connected to the device to which the purified metal is to be delivered. The material to be purified is disposed in the base of the U while the upstream leg is surrounded with cooling coils for condensation, and the downstream leg has heating coils at a portion thereof for vaporization. The bottom reservoir portion of the U is heated. Between the reservoir portion and the upstream leg of the U within the device is a capillary tube to carry the heated material from the reservoir to the heated region. A series of these tubes can be connected together in continuous fashion to produce a fractional distillation.

3,702,763
HIGH TEMPERATURE BRAZING ALLOY

Nicholas T. Gamer, Palo Alto, and James G. Richardson, Menlo Park, Calif., assignors to Western Gold & Platinum Company
No Drawing. Filed Apr. 19, 1971, Ser. No. 135,493
Int. Cl. C22c *5/00*
U.S. Cl. 75—173 R **6 Claims**

A high temperature alloy for brazing high strength lightweight titanium base alloy systems and the like consists, in percent by weight, of 1–20% palladium, 3 to 10% gallium, and the balance silver. A preferred composition of the brazing alloy is 7–15% palladium, 5–9% gallium and the balance silver.

3,702,764
CHLORINE AND IODINE CONTAINING POLY-9-VINYLCARBAZOLE ELECTROPHOTOGRAPHIC POLYMER

Kikuo Kinjo, Tokyo, Teruo Yamanouchi, Fujisawa, and Eiichi Kondo, Hiroshi Matsuno, and Katsuhiko Nishide, Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
No Drawing. Filed July 15, 1970, Ser. No. 55,216
Claims priority, application Japan, July 18, 1969, 44/56,806
Int. Cl. G03g *5/00*
U.S. Cl. 96—1.5 **16 Claims**

An electrophotographic photosensitive material comprises a polymer containing a chlorine and iodine substituted vinylcarbazole unit.

3,702,765
ALKALI-SOLUBLE LIGHT SENSITIVE POLYMERS AND COMPOSITIONS AND PROCESSES FOR USING SUCH POLYMERS

Thomas M. Laakso, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 13, 1970, Ser. No. 80,497

Int. Cl. G03c *1/68, 1/70*

U.S. Cl. 96—33 **11 Claims**

Novel alkali-soluble light sensitive polymers are prepared by a process involving the controlled saponification of a light sensitive polyester which has been prepared by condensation of a polymer containing groups, such as hydroxyl or amino groups, condensible with a light sensitive dicarboxylic acid reactant wherein one of the carboxyl groups has been blocked by conversion to the ester, e.g., with the half ester-half acid chloride of the light sensitive dicarboxylic acid. These alkali-soluble polymers are useful in photosensitive compositions and elements to prepare photomechanical images such as lithographic printing plates, resists, and the like.

3,702,766
PHOTORESIST COMPOSITIONS CONTAINING N-HALO CYCLIC IMIDES

Kenneth R. Dunham, Richard A. Newcomb, and Marshall E. Yost, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 55,973 and Ser. No. 55,974, both July 17, 1970. This application Jan. 29, 1971, Ser. No. 111,121

Int. Cl. G03c *1/70, 1/68*

U.S. Cl. 96—75 **25 Claims**

Novel photoresist compositions are described which have improved adhesion to the substrate on which they are coated.

3,702,767
SPECTRALLY SENSITIZED LIGHT SENSITIVE MATERIAL

Hans Öhlschläger, Cologne, Oskar Riester, Leverkusen, and Heinz Meckl, Cologne, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Jan. 4, 1971, Ser. No. 103,798

Claims priority, application Germany, Jan. 15, 1970, P 20 01 572.9

Int. Cl. G03c *1/40, 1/08*

U.S. Cl. 96—127 **7 Claims**

Cyanine and merocyanine dyes which are derived from 5-oxo-5,6,7,8-tetrahydroquinoline are good spectral sensitizers for silver halide emulsion layers and layers containing photoconductive zinc oxide in an insulating binder.

3,702,768
LOW CALORIE FROZEN DESSERTS

Thomas P. Finucane, Hartsdale, and Philip J. Capasso, Ossining, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed Nov. 17, 1969, Ser. No. 877,520

Int. Cl. A23g *5/00*

U.S. Cl. 99—136 **4 Claims**

A low calorie frozen dessert having eating qualities approximating that of ice cream is formed from the whipped emulsion of a particular combination of liquid oils and hydrogenated vegetable fats in a matrix phase comprising water, proteins, and sugars. A critical amount of a high capacity water binding material such as gelatin is present in the composition to attain the desired mouthfeel of the product.

3,702,769
METHOD OF POLISHING LEATHER WITH COMPOSITIONS CONTAINING REACTION PRODUCT OF HYDROXY ENDBLOCKED SILOXANES AND AMINOFUNCTIONAL SILANES

James R. Vaughn, Greensboro, N.C., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Continuation of abandoned application Ser. No. 703,533, Feb. 7, 1968. This application Jan. 4, 1971, Ser. No. 103,835

Int. Cl. C08h *9/06;* **C09f; C09g** *1/08*

U.S. Cl. 106—10 **11 Claims**

A leather polish is disclosed which not only polishes but cleans and preserves the leather. In addition, the polish makes the leather soft and supple while imparting water resistance. The polish is in the form of an emulsion which consists essentially of water, a solvent, a wax, an emulsifier and the reaction product of particular hydroxyl endblocked siloxanes and amino-functional silanes.

3,702,770
ALUMINUM AND ALKALI TITANATE ANODIC PROTECTIVE COATING COMPOSITION

Harold J. Michael, Columbus, Ohio, assignor to North American Rockwell Corporation

No Drawing. Filed Nov. 27, 1970, Ser. No. 93,493

Int. Cl. C04b *33/00;* **B05b** *7/20*

U.S. Cl. 106—39 R **6 Claims**

Compositions having essentially powdered aluminum mixed with alkali titanate from the group consisting of lithium titanate and lithium-silico-titanate are provided for application to metal parts by conventional oxy-acetylene flame spraying equipment or plasma arc spraying equipment to develop improved metal part resistance to surface corrosion attack.

3,702,771
HARD PITCH BINDERS

Lloyd H. Brown, Crystal Lake, and David D. Watson, Barrington, Ill., assignors to The Quaker Oats Company, Chicago, Ill.

No Drawing. Filed Aug. 20, 1970, Ser. No. 65,704

Int. Cl. C04b *35/66, 35/68, 35/70*

U.S. Cl. 106—55 **5 Claims**

This invention provides a novel acid cured furan based binder which is a liquid at 25° C., which is useful for binding substantially non-alkaline aggregate such as carbon and graphite, and which is cured at room temperature to a thermoset condition. The hard pitch binder comprises 50 to 75 percent by weight hard pitch with a softening point between 110° C. and 180° C. and 50 to 25 percent by weight plasticizer which comprises furfuryl alcohol; furfural; and a member selected from the group consisting of cyclohexanone, mesityl oxide, and mixture thereof.

3,702,772
PARAFFIN WAX COMPOSITIONS

Thomas B. Richey, Westfield, and Clarence W. Spilker, Warren, N.J., assignors to Malmstrom Chemical Corp., Linden, N.J.

No Drawing. Filed Feb. 12, 1970, Ser. No. 11,012

Int. Cl. C08h *9/00*

U.S. Cl. 106—270 **5 Claims**

Wax compositions suitable for use in candle manufacture, and in the production of wax coated paper and paperboard, etc., are provided by blending paraffin wax with limited amounts, viz, 5 to 25 weight percent, of lanolin wax of specified properties.

3,702,773
ALKANOLAMINE STABILIZED HIGH SOLIDS TITANIUM DIOXIDE SLURRY

Elmer Linwood Hall and John Thomas Looby, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 118,566, Feb. 24, 1971, which is a continuation-in-part of abandoned application Ser. No. 856,162, Sept. 8, 1969. This application July 21, 1971, Ser. No. 164,898

Int. Cl. C09c *1/36, 3/02*

U.S. Cl. 106—300 **10 Claims**

A stabilized aqueous titanium dioxide pigment slurry of from about 60 to 82 percent by weight titanium dioxide is useful in the manufacture of paper. About from 10 to 45 percent of the total titanium dioxide in the slurry is a first portion titanium dioxide which is alumina treated polyphosphate dispersed titanium dioxide; a second portion titanium dioxide comprising the remainder of the total titanium dioxide is dry finished titanium dioxide which has been ground in the presence of an alkanolamine. The slurry is then treated with a second alkanolamine. Preferably, the slurry is subjected to high shear milling.

3,702,774
MOULD TREATMENT

James Derek Birchall and John Edward Cassidy, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed June 18, 1971, Ser. No. 154,610

Claims priority, application Great Britain, June 30, 1970, 31,585/70

Int. Cl. B29c *1/04*

U.S. Cl. 117—5.1 **14 Claims**

A mould surface is coated with a halogen-containing complex phosphate of aluminum containing at least one chemically-bound molecule of a hydroxy compound R—OH, wherein R is a hydrogen atom, an aliphatic group, or a substituted aliphatic group and a dispersant for the complex phosphate.

3,702,775
DIFFUSE REFLECTIVE COATING

John W. Stuart, Silver Spring, Md., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

No Drawing. Filed Feb. 12, 1971, Ser. No. 115,134

Int. Cl. C03c *1/00*

U.S. Cl. 117—35 R **10 Claims**

An improved non-specular diffuse, reflective coating is provided by coating a substrate with a composition of a highly reflective, crystalline inorganic salt and a liquid vehicle of a solvent having limited solvent activity for the salt, a non-solvent wetting agent, and a relatively volatile dispersant-drying agent, and drying the coating. Excellent results have been obtained when the salt is sodium chloride, the solvent is a diol with not more than one terminal hydroxy group, the non-solvent is xylene or toluene, and the drying agent is ethanol or isopropanol.

3,702,776
PROCESS FOR SHRINKPROOFING WOOL AND RESULTANT PRODUCT

George M. Wagner, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 814,846, Apr. 9, 1969, which is a continuation-in-part of abandoned application Ser. No. 510,102, Nov. 26, 1965. This application Jan. 28, 1971, Ser. No. 110,603

The portion of the term of the patent subsequent to Mar. 21, 1989, has been disclaimed

Int. Cl. B44d *1/44;* **D06m** *15/52*

U.S. Cl. 117—62.2 **16 Claims**

Wool is rendered shrink resistant by treating it with a solution containing a polyhydroxide-modified isocyanate and, thereafter, curing the thus-treated wool with water. The polyhydroxide-modified isocyanate used contains at least 3 free NCO groups per molecule. The preferred isocyanate material is toluene diisocyanate and typical polyhydroxy compounds which may be reacted with it to effect its modification are castor oil, glycerine and trimethylol propane.

3,702,777
METHOD FOR CATALYZING POLYUREA COATINGS

James W. Watson, Parma, Ohio, and Billy D. Payne, South Bend, Ind., assignors to SCM Corporation, Cleveland, Ohio

No Drawing. Continuation-in-part of application Ser. No. 724,610, Apr. 26, 1968, now Patent No. 3,560,264. This application Oct. 15, 1970, Ser. No. 81,135

The portion of the term of the patent subsequent to Feb. 2, 1988, has been disclaimed

Int. Cl. B32b *21/08;* **B44d** *1/28*

U.S. Cl. 117—72 **6 Claims**

A novel method for catalyzing the formation of polyurea by the reactions between polyfunctional-isocyanates and polyfunctional-imines through the presence of an effective amount of lower hydrocarbyl substituted phenolic catalyst is provided. One particularly important embodiment comprises the formation of polyurea film coatings on wood substrates by reacting alkylene diisocyanates and alkylene diimines in the presence of a lower hydrocarbyl substituted chlorophenol.

3,702,778
SHIP'S HULL COATED WITH ANTIFOULING SILICONE RUBBER

William J. Mueller, Worthington, and Louis J. Nowacki, Columbus, Ohio, assignors to Batelle Memorial Institute, Columbus, Ohio

No Drawing. Filed Mar. 23, 1970, Ser. No. 22,060

Int. Cl. B32b *15/08, 25/20*

U.S. Cl. 117—75 **6 Claims**

Surfaces of articles, whose utility involves exposure of the surface to an aqueous marine-fouling environment, are protected from marine fouling thereof by a cured silicone rubber overlying and excluding the aqueous marine-fouling environment from contacting the surface.

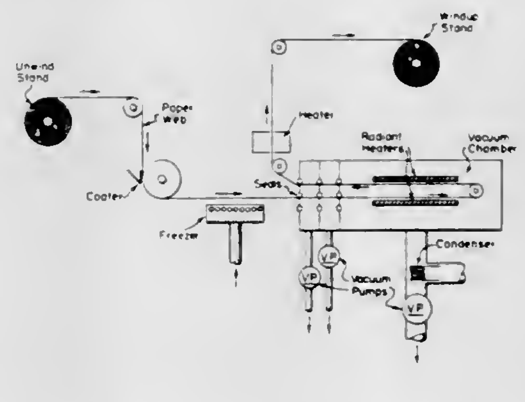
3,702,779
COATING OF WEBS BY FREEZE-DRYING AND PRODUCTS THEREFROM

Thomas A. Fadner, Oxford County, Maine, and Karl V. Kraske, South Hadley, Mass., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of application Ser. No. 749,008, July 31, 1968. This application Apr. 21, 1970, Ser. No. 30,571

Int. Cl. B05c *11/10*

U.S. Cl. 117—102 R **31 Claims**



Coated paper is produced by applying a composition comprising a polymeric material with or without added pigments dispersed in a liquid vehicle, freezing the coating, subjecting the frozen coating to a vacuum to remove the majority of the liquid vehicle, and returning the dried or partially dried coating on the web to ambient temperature.

3,702,780

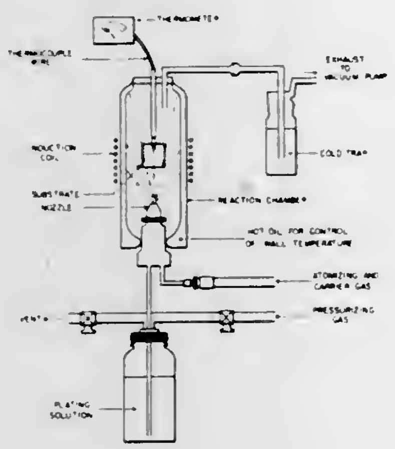
PROCESS OF PLATING BY PYROLYTIC DEPOSITION

James C. Withers, Reston, Va., assignor to General Technologies Corporation

Filed Feb. 11, 1969, Ser. No. 798,402

Int. Cl. B64d *1/08*

U.S. Cl. 117—104 R **8 Claims**



Thermal decomposition or pyrolysis of any known precursor compound to deposit a plating or adherent coating of a solid product of the decomposition upon a solid substrate is accomplished by forcibly projecting, e.g. by pressure atomization, against the substrate heated to the decomposition temperature of the precursor compound, finely-divided particles of a liquid containing the precursor compound having a particle size within the range of about 1–1000 microns, while the substrate is maintained in a vacuum or continuous gaseous phase compatible with the system. The precursor compound can be dissolved in an appropriate solvent or, if liquid at the treatment conditions, can be projected directly. The substrate is preferably heated by induction. Preferred precursors are organometallic compounds of metals having an atomic number from 4–83 which liberate the free metal on decomposition by heating.

3,702,781

METHOD OF IMPREGNATING PERMEABLE MATERIALS WITH A POLYURETHANE POLYMER

Rolf Dahl, West Columbia, S.C., assignor to Continental Tapes, Incorporated, Columbia, S.C.

No Drawing. Continuation-in-part of application Ser. No. 297,190, July 24, 1963. This application Mar. 30, 1970, Ser. No. 23,983

Int. Cl. C09j *7/04*

U.S. Cl. 117—118 **18 Claims**

Permeable materials containing "active" hydrogen, such as paper, are markedly improved in dry and wet tensile strengths and delamination resistance without loss of flexibility, by impregnation with certain polyurethane polymers.

3,702,782

REACTION OF ETHYLENE/MALEIC ANHYDRIDE STATISTICAL COPOLYMERS WITH POLYAMINES

Jean-Pierre Barozier, Lens, and Adrien Nicco, Bethune, France, assignors to Ethylene-Plastique, Paris, France

No Drawing. Filed May 19, 1970, Ser. No. 38,885

Claims priority, application Great Britain, May 19, 1969, 25,404/69

Int. Cl. B44d *5/12*

U.S. Cl. 117—118 **8 Claims**

A method of modifying the physical and chemical properties of ethylene/maleic anhydride statistical copolymers by treating them with a polyamine. The polyamine diffuses into the polymer and reacts with groups derived from the maleic anhydride, thereby partially or totally cross-linking the copolymer. Shaped articles of the copolymer may be so treated to modify their surface properties and, if they are less than about 1 cm. thick, to modify their bulk properties. The treated copolymers have good heat resistance and electrical insulating properties.

3,702,783

EPOXY SILANE COUPLING AGENTS

Robert C. Hartlein, % Dow Corning Corporation, Midland, Mich. 48640

No Drawing. Filed Sept. 4, 1970, Ser. No. 69,979

Int. Cl. C03c *25/02*

U.S. Cl. 117—126 GS **4 Claims**

The bonding of siliceous surfaces, such as glass, to organic resins, such as polyamides, is improved by coating the siliceous surface with a mixture of 3-glycidoxypropyltrimethoxysilane and methyltrimethoxysilane.

3,702,784

PRESERVATIVE COMPOSITIONS

James G. Farquhar, Harrogate, and Geoffrey M. Gibson and Brian J. Joice, Leeds, England, assignors to Albright & Wilson Limited, Warwickshire, England

No Drawing. Filed July 22, 1969, Ser. No. 843,771

Claims priority, application Great Britain, July 23, 1968, 35,200/68

Int. Cl. B27k *3/00;* **B44d** *1/26;* **B05c** *3/00*

U.S. Cl. 117—149 **10 Claims**

In order to increase the permanency of chlorinated phenols (in particular pentachlorophenol) in wood to which they have been applied as fungicides a salt of chromic acid with an organic base is employed to act as a fixative. Preferably the organic dichromated and the chlorinated phenol are applied to the wood from the same solution in an organic solvent.

3,702,785

LOW-TEMPERATURE CURABLE ARTICLES

Donald P. Knechtges, Grafton, and Bela K. Mikofalvy, Sheffield Lake, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Sept. 14, 1970, Ser. No. 72,107

Int. Cl. D21h *1/40*

U.S. Cl. 117—155 UA **5 Claims**

Nonwoven fabrics, textiles, papers and other substrates treated with a polymer latex derived predominantly from acrylic esters and/or vinyl esters are curable at low temperatures to obtain optimum or near optimum physical properties. The articles may be coated, impregnated or saturated with the polymer latex.

3,702,786

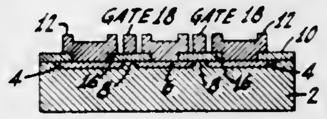
MOS TRANSISTOR WITH ALUMINUM OXIDE GATE DIELECTRIC

Michael Thomas Duffy, Princeton Junction, N.J., assignor to RCA Corporaion

Filed Oct. 28, 1970, Ser. No. 84,628

Int. Cl. B44d *1/18;* **C23c** *11/00*

U.S. Cl. 117—212 **9 Claims**



A method of making an MOS transistor having a film of Al_2O_3 as its gate electrode insulator, comprising depositing the oxide by a vapor deposition process, then heating the deposited film at a temperature of above about 700° C. in a wet gas atmosphere.

3,702,787

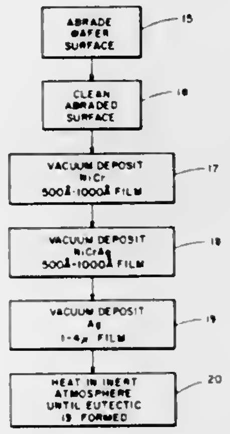
METHOD OF FORMING OHMIC CONTACT FOR SEMICONDUCTING DEVICES

Robert Arthur Lowry, Jr., Phoenix, and Billy Enal Smith, Scottsdale, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 2, 1970, Ser. No. 85,965

Int. Cl. B44d *1/20;* **C23b** *5/62*

U.S. Cl. 117—213 **5 Claims**


ABRADE WAFER SURFACE
15
CLEAN ABRADED SURFACE
16
VACUUM DEPOSIT NiCr 500Å-1000Å FILM
17
VACUUM DEPOSIT NiCrAg 500Å-1000Å FILM
18
VACUUM DEPOSIT Ag 1-4μ FILM
19
HEAT IN INERT ATMOSPHERE UNTIL EUTECTIC IS FORMED
20

There is disclosed an ohmic contact for silicon semiconducting devices in which the silicon is overlayed with a thin film of nickel-chromium followed by a thin film of nickel-chromium-silver over which is deposited a thick film of silver to complete the ohmic contact. A method for fabricating the ohmic contact is also disclosed.

3,702,788

INSULATED ELECTRICAL CONDUCTORS COATED WITH POLYIMIDE-AMIDE MODIFIED POLYIMIDE

James R. Haller, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Application Nov. 12, 1968, Ser. No. 775,204, now Patent No. 3,582,458, which is a continuation-in-part of application Ser. No. 648,945, June 26, 1967, now abandoned. Divided and this application Mar. 5, 1971, Ser. No. 121,558

Int. Cl. B32b *15/20, 27/34*

U.S. Cl. 117—230 **6 Claims**

Polymer-metal laminate composites having improved adhesion between metallic and polymer laminae, the polymer consisting essentially of a mixture of a polyimide and a polyimide containing amide groups along the backbone of the polymer chain; and compositions adapted to making such laminates, containing the said polymer mixture in solution in a suitable solvent.

3,702,789

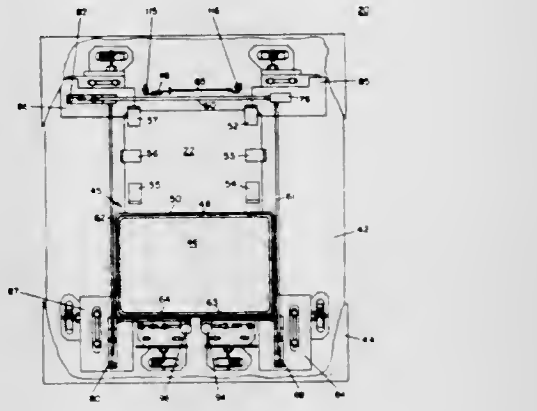
PROCESS FOR ELIMINATING FLASHING FROM MOLDED THERMOPLASTIC ARTICLES

Paul Dungan, Cedar Rapids, Iowa, assignor to W. R. Grace & Co., Duncan, S.C.

Filed Nov. 25, 1970, Ser. No. 92,810

Int. Cl. B08b *7/00*

U.S. Cl. 134—5 **3 Claims**



Flashing left on an article after molding is eliminated by raising the temperature of the flashing until it no longer exists. Thermoplastic flashing is heated until it melts and merges with the general surface of the article. Preferably a ribbon heater is positioned closely adjacent to the flashing and heated for a time sufficient to melt the flashing, which is generally paper thin, without damaging the adjacent surfaces of the article.

3,702,790

MONOLITHIC INTEGRATED CIRCUIT DEVICE AND METHOD OF MANUFACTURING THE SAME

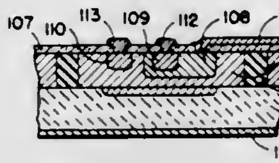
Sho Nakanuma and Toshio Wada, Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Nov. 26, 1969, Ser. No. 880,051

Claims priority, application Japan, Dec. 2, 1968, 43/88,478, 43/88,481

Int. Cl. H01l *7/36, 7/54*

U.S. Cl. 148—1.5 **9 Claims**



A semiconductor integrated circuit device is disclosed in which a plurality of single crystal regions of one conductivity type are formed on a major surface of a substrate of an opposite conductivity type. A polycrystal isolation region is formed on that surface in direct contact with the substrate and surrounds the single crystal regions. Also disclosed are several methods for fabricating that integrated circuit device.

3,702,791
METHOD OF FORMING SUPERALLOYS

John C. Freche, Fairview Park, William J. Waters, Cleveland, and Richard L. Ashbrook, Berea, Ohio, assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Apr. 20, 1970, Ser. No. 29,917
Int. Cl. C21d *7/14*
U.S. Cl. 148—11.5 R **11 Claims**

A highly alloyed material obtained using prealloyed powders is easily shaped at high temperatures if it becomes superplastic because of its particular microstructure. Subsequent heat treatments restore the ability of the material to resist deformation at high temperatures.

3,702,792
NOVEL POLYBASIC PROPELLANT

Helmuth Nolte and Paul Lindemann, Waldkraiburg, and Walter Hahn, Aschau, Germany, assignors to Wasagchemie G.m.b.H. Munich, Lowengrube, Germany

No Drawing. Filed Sept. 15, 1971, Ser. No. 180,853
Int. Cl. C06b *19/02*
U.S. Cl. 149—10 **9 Claims**

A novel process for the preparation of a polybasic propellant powder having a progressive rate of combustion by forming a polybasic propellant containing water-soluble, nitrogen-rich compounds, treating the said propellant with an aqueous media to dissolve the said water-soluble compound out of the surface layer and introducing into the resulting pores a desensitizer to control the rate of combustion and the propellant produced by the process.

3,702,793
GELLED LIQUID PROPELLANT OXIDIZERS OF INTERHALOGEN COMPOUNDS

Henry P. Beltramini, South Sudbury, and James W. Dale, Winchester, Mass., assignors to Monsanto Research Corporation, St. Louis, Mo.

No Drawing. Filed Feb. 25, 1964, Ser. No. 347,995
Int. Cl. C06b *15/00;* **C06d** *5/06*
U.S. Cl. 149—1 **16 Claims**

1. The method of gelling a propellant oxidizer which comprises combining (1) a liquid chlorine/fluorine interhalogen compound oxidizer selected from the class consisting of ClF_3 and mixtures of ClF_3 with ClF_5, with (2) a gellant selected from the class consisting of $Ba(BiF_6)_2$, $Ba(SbF_6)_2$ and mixtures of $Ba(SbF_6)_2$ and $Ba(BiF_6)_2$.

3,702,794
METHOD OF IMPROVING THE ADHESION OF A SILICEOUS MATERIAL AND A POLYOLEFIN USING A SILANE AND A CHLORINATED ORGANIC COMPOUND

Robert C. Hartlein, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Application Aug. 5, 1970, Ser. No. 61,505, now Patent No. 3,630,827, which is a continuation-in-part of abandoned application Ser. No. 788,907, Jan. 3, 1969. Divided and this application Apr. 30, 1971, Ser. No. 139,135
Int. Cl. B32b *7/60, 17/06;* **C03c** *17/30*
U.S. Cl. 156—310 **16 Claims**

Polyolefin resins, such as polypropylene, are strengthened by the incorporation of a siliceous reinforcing material which has a first coating (a) of a silane coupling agent, such as

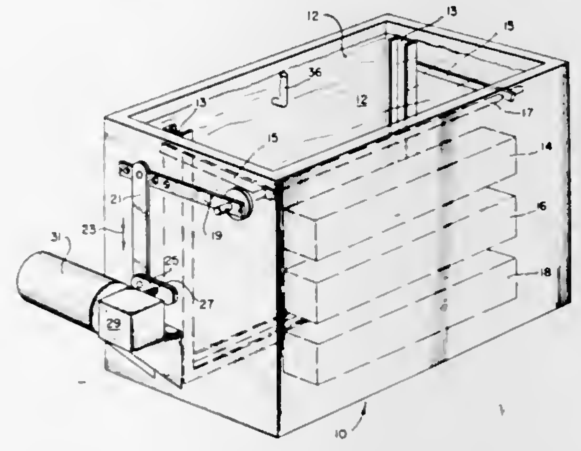
$$(C_2H_5O)_3SiCH_2CH_2CH_2NHCH_2CH_2NH_2$$

and a second coating (b) of a chlorinated organic compound, such as perchlorinated para-xylene.

3,702,795
APPARATUS FOR ULTRASONIC ETCHING OF POLYMERIC PRINTING PLATES

Forrest A. Wessells, Baltimore, and Donald P. Gush, Hyattsville, Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of application Ser. No. 764,849, Oct. 3, 1968, which is a continuation-in-part of application Ser. No. 707,299, Feb. 21, 1968, both now abandoned. This application Dec. 24, 1970, Ser. No. 101,352
Int. Cl. C23g *1/06;* **H05k** *3/00*
U.S. Cl. 156—345 **6 Claims**

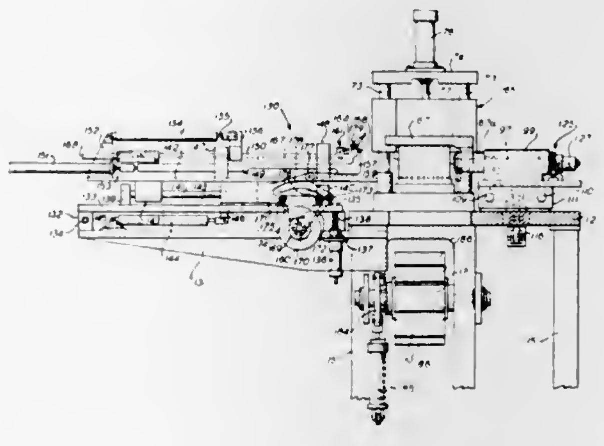


The invention disclosed is an apparatus for ultrasonic etching of polymeric printing plates. The apparatus includes a tank containing a liquid bath and having ultrasonic energy means for energizing the bath. The ultrasonic means are disposed along one inner vertical wall of the tank.

3,702,796
MACHINE FOR PRODUCING MAGNETIC BELT RECORDS

Theodor Festner, Upper Saddle River, Theodore J. Litwin, Edison, and Hans W. Preuss, Wayne, N.J., assignors to Festner Consulting Associates, Upper Saddle River, N.J.

Filed Sept. 22, 1969, Ser. No. 859,617
Int. Cl. B32b *31/00*
U.S. Cl. 156—512 **20 Claims**

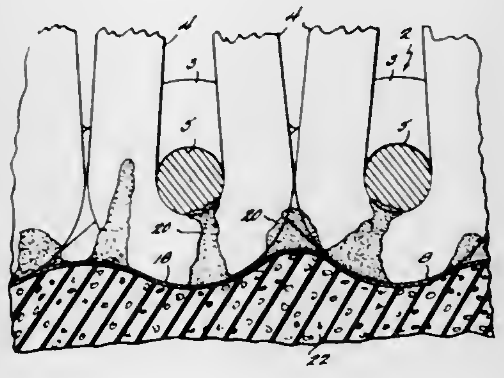


A machine for producing flexible belt records for dictating machines is programmed to complete automatically a cycle of successive step operations to draw strips of a wide magnetic record tape from a supply roll, attach each strip to a pair of spaced folding arms, cut off each strip on a bias to a predetermined length along the outer edges of the folding arms, move the arms to fold the strip into a closed loop with the end edges abutting evenly with each other, and then apply a length of pressure-sensitive splicing tape on the uncoated side of the record tape across the abutting edges to secure the loop into a permanent belt record.

3,702,797
ANTISTATIC TEXTILE PRODUCT

William H. Cochran II, P.O. Box 32, Stonington, Conn. 06378

Continuation-in-part of application Ser. No. 765,267, Oct. 4, 1968. This application July 13, 1970, Ser. No. 54,640
Int. Cl. D03d *27/00*
U.S. Cl. 161—66 **8 Claims**



An antistatic textile, e.g. carpet, is disclosed which comprises a fabric layer having a surface which is susceptible to the undesired accumulation of static charge bonded to an electrically conducting static dissipating metal foil by means of a web of thermoplastic material which has been fused to the fabric layer. The web provides direct electrical contact with the surface yarns of the fabric layer.

3,702,798
VITREOUS FIBERS BONDED WITH A THERMOSET RESIN INCLUDING TWO ORGANO-SILICON COMPOUNDS

Richard F. Shannon, Lancaster, Ohio, assignor to Owens-Corning Fiberglas Corporation

No Drawing. Continuation of application Ser. No. 465,196, June 18, 1965. This application Aug. 14, 1969, Ser. No. 861,214
Int. Cl. D04h *1/30*
U.S. Cl. 161—170 **10 Claims**

A vitreous fiber product which is a mass of intermeshed and felted fibers of glass or other vitreous material bonded to one another at points of contact by a thermoset synthetic resinous material which includes two specific and different organo silicon compounds, or equivalents therefor.

3,702,799
POLYMERS OF QUATERNARY AMMONIUM COMPOUNDS USED AS WET STRENGTH AGENTS IN PAPER

Sheldon N. Lewis, Willow Grove, Richard F. Merritt, Fort Washington, and William D. Emmons, Huntingdon Valley, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 813,724, Apr. 4, 1969. This application Oct. 12, 1970, Ser. No. 80,144
Int. Cl. D21h *3/44*
U.S. Cl. 162—168 **10 Claims**

This invention is concerned with monoethylenically unsaturated acid ester monomers, such as those of acrylic or methacrylic acid, containing a quaternary ammonium halide group having a substituent on the quaternary nitrogen atom of the formula $—CH_2CH(OH)CH_2X$ wherein X is chlorine, bromine or iodine. It is also concerned with addition polymers of such monomers, and methods of producing the monomers and polymers. The monomers and polymers are stable at acid pH values, although capable of reacting with other reactants for the hydroxyl and/or halide group. On heating, they are self-reactive and become cross-linked. At alkaline pH values, they become self-reactive and the polymers crosslink themselves by slow reaction even at room temperature. However, the cross-linking reaction becomes quite rapid on heating. The invention also concerns the use of these polymers as wet-strength agents in making paper and as electroconductive aids in the making of various electroconductive papers for electrostatic image reproduction systems.

3,702,800
CATIONIC WATER-SOLUBLE POLYVINYL ALCOHOL RETENTION AID

Andrew G. Tsuk and Charles C. Kirk, Laurel, Md., assignors to W. R. Grace & Co.

No Drawing. Original application Jan. 26, 1970, Ser. No. 5,965, now Patent No. 3,609,132. Divided and this application Jan. 29, 1971, Ser. No. 111,086
Int. Cl. D21h *3/40*
U.S. Cl. 162—168 **1 Claim**

This invention relates to a cationic water-soluble polyvinyl alcohol prepared from a water-soluble vinyl acetate/N-vinyl-N-methyl acetamide copolymer by hydrolysis. The hydrolyzed copolymer significantly enhances the retention of pigment particles by the cellulose fibers in a paper pulp slurry.

3,702,801
PROCESS OF MAKING PRELUBRICATED PAPER

Michael L. De Matte, Columbia, Md., assignor to Westvaco Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 63,599, Aug. 13, 1970. This application July 2, 1971, Ser. No. 159,505
Int. Cl. D21h *3/04, 3/10*
U.S. Cl. 162—173 **4 Claims**

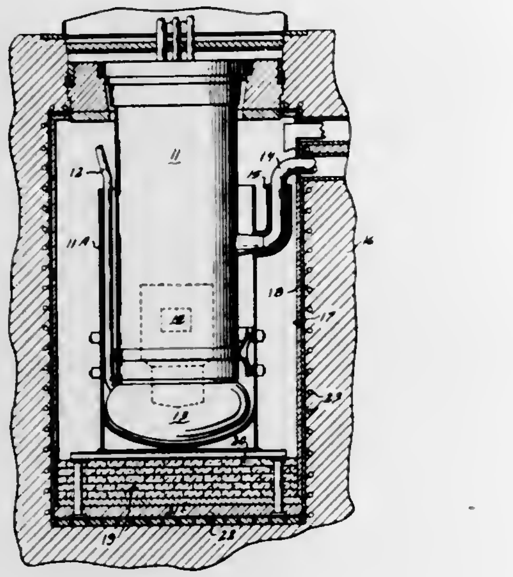
Paper, suitable for any intermediate or end use application which requires the cutting, punching or trimming of the paper, is produced by an improved process which includes sizing the paper made of chemical wood pulp at the size press with an oil-in-water emulsion containing starch, whereby small quantities of lubricating oil can be incorporated uniformly into the paper. The paper thus treated contains an evenly distributed amount of oil ranging from about 0.2 pound to 1.5 pounds per ream of paper. The product does not suffer from oil odor or oil bleeding and has greatly improved opacity over other oiled papers heretofore known in the art.

3,702,802
NUCLEAR REACTOR INCORPORATING MEANS FOR PREVENTING MOLTEN FUEL FROM BREACHING THE CONTAINMENT VESSEL THEREOF IN THE EVENT OF A CORE MELT-DOWN

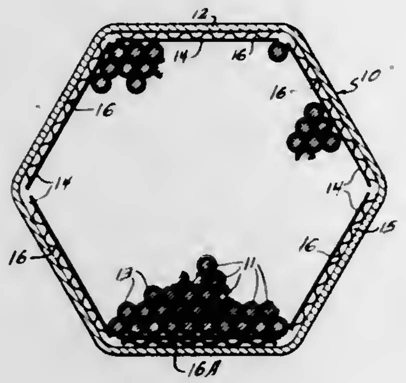
George Jansen, Jr., Kennewick, Wash., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed June 16, 1971, Ser. No. 153,654
Int. Cl. G21c *9/00*
U.S. Cl. 176—38 **7 Claims**

A ceramic oxide eutectic with a relatively low melting point which will dissolve nuclear reactor fuel is employed as a barrier material to prevent molten fuel from breaching the containment vessel surrounding a nuclear reactor in the event of a core meltdown. The ceramic oxide eutectic—preferably basalt or other SiO_2-Al_2O_3 material used in the form of brick, block, or gravel—rests on a layer of depleted uranium dioxide and a layer of fire brick which insulates a cooled steel containment vessel from the basalt. In the extremely unlikely event of an accident to a fast reactor causing a gross core meltdown, the molten mass of fuel will fall onto the basalt, melting the basalt and dissolving in the pool of molten basalt thus formed. The fuel is thereby dispersed over a large volume at a temperature sufficiently low that the reactor containment is not threatened.



3,702,803
FUEL ASSEMBLY FOR A FAST REACTOR
Paul R. Huebotter, Downers Grove, Ill., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed Feb. 12, 1971, Ser. No. 114,768
Int. Cl. G21c *3/34*
U.S. Cl. 176—40 4 Claims



A fuel assembly for a fast reactor consisting of a bundle of spaced, elongated, stainless-steel-clad fuel pins disposed within a coolant duct contains means for cooling the coolant duct to a lower temperature than that of the bundle of fuel pins and a crushable spacer material disposed in an annulus between the bundle of fuel pins and the coolant duct so that the coolant duct does not swell even though the fuel pins do swell. The crushable spacer material may be extra strength on the side of the fuel assembly closest to the centerline of the reactor core.

3,702,804
HYDROLYTIC ENZYMES CHEMICALLY COUPLED TO CELLULOSE ETHERS
Sidney Alan Barker, Peter John Somers, and Roger Epton, Birmingham, England, assignors to Ranks Hovis McDougall Limited, London, England
No Drawing. Filed Mar. 17, 1970, Ser. No. 20,390
Claims priority, application Great Britain, Mar. 18, 1969, 14,074/69
Int. Cl. C07g *7/02*
U.S. Cl. 195—63 8 Claims

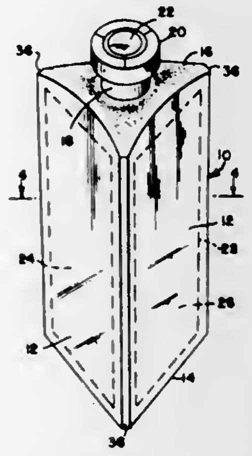
A process for the preparation of a water insoluble pullulanase, carboxypeptidase or dextranase which process comprises reacting at 0–5° C. the pullulanase, carboxypeptidase or dextranase dissolved in a buffer within a pH range of 6.5–8.6 with the p-diazophenoxy-hydroxypropyl ether of cellulose.

3,702,805
PROCESS FOR THE PRODUCTION OF A DEXTRAN-DEGRADING ENZYME
Keijiro Ishibashi, Tokio Okaniwa, Atsushi Hattori, and Masetoshi Arai, Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan
No Drawing. Continuation of application Ser. No. 863,718, Oct. 3, 1969. This application Dec. 15, 1971, Ser. No. 208,389
Claims priority, application Japan, Oct. 3, 1968, 43/72,026; Nov. 5, 1968, 43/80,871; Jan. 24, 1969, 44/5,108; May 10, 1969, 44/36,004
Int. Cl. C07g *7/02*
U.S. Cl. 195—66 R 5 Claims

An improved process for the production of dextranase which comprises culturing a dextranase-producing microorganism selected from the genera Chaetomium, Humicola, Sporotrichum, Anixiella, Macrosporium, Streptomyces, Gibberella, Gloeosporium and Glomerella, particularly *Chaetomium spirale, Chaetomium gracile, Sporotrichum asteroides,* or *Gibberella fujikuroi* in a fermentation medium and recovering from said medium the dextranase which accumulates therein.

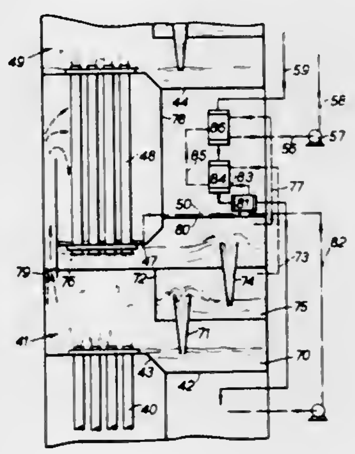
Dextranase itself is known to be useful, for example, as enzymatic preparations for prevention of tooth decay or scale deposit.

3,702,806
DISPOSABLE CULTURE MEDIA CONTAINER
William Emil Oliva, 11340 Sunset Blvd., Los Angeles, Calif. 90049
Continuation-in-part of application Ser. No. 786,833, Dec. 18, 1968, which is a continuation of application Ser. No. 547,609, May 4, 1966. This application Sept. 3, 1970, Ser. No. 69,484
Int. Cl. C12b *1/00*
U.S. Cl. 195—139 4 Claims



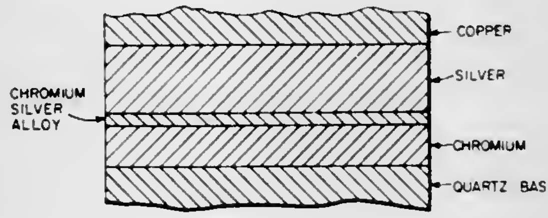
A triangular-shaped disposable environmental culture media container comprising a bottle having an elongated body portion with three flat side walls spaced from each other in triangular transverse cross section to cooperatively define a sealable container for carrying a plurality of culture media in fixed spaced relationship without breaking away from said side walls.

3,702,807
VERTICAL MULTI-EFFECT DISTILLATION PLANT
Ivan Henry Newson, Didcot, and Malcolm Hoban Delve, Wallingford, England, assignors to United Kingdom Atomic Energy Authority, London, England
Filed June 25, 1970, Ser. No. 49,814
Claims priority, application Great Britain, June 26, 1969, 32,219/69
Int. Cl. B01d *3/02*
U.S. Cl. 202—174 7 Claims



A multi-effect distillation plant has its effects superimposed with the lowest pressure effect at the bottom and provision is made for raising the liquid through the effects via riser passages, using mainly the flashing energy to get lift. The flash steam so generated is condensed on the outer surfaces of the walls of the passages of the next effect. Within these walls the raised liquid is again gaining lift by being flashed to vapour at the lower pressure subsisting in the next effect. By this system both liquid and condensate acquires potential energy during distillation.

3,702,808
PROCESS FOR THE PRODUCTION OF STAR TRACKLNG RETICLES
Wade O. Smith, Bowie, and Albert R. Toft, Edgewater, Md., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Oct. 12, 1970, Ser. No. 80,029
Int. Cl. C23b *5/48, 5/06;* **C23f** *17/00*
U.S. Cl. 204—15 12 Claims



A method for the production of reticles, particularly those for use in outer space, wherein the product is a quartz base coated with highly adherent layers of chromium, chromium-silver, and silver vacuum deposited through a mask, and then coated with an electrodeposit of copper from a copper sulfate solution followed by an electrodeposit of black chromium. The masks are produced by coating a beryllium-copper alloy substrate with a positive working photoresist, developing the photoresist according to a pattern to leave a positive mask, plating uncoated areas with gold, removing the photoresist, coating the substrate with a negative working photoresist, developing the negative working photoresist to expose the base metal of the pattern, and chemically etching the unplated side of the pattern to produce the mask. The mask produced is then used in the vacuum deposition of: (1) chromium metal on the surface of a quartz base to obtain a highly adherent quartz-chromium interface; (2) silver on the chromium deposit, during the final stage of chromium deposit, to produce a silver-chromium alloy layer; and (3) silver onto the surface of the alloy layer. The coated quartz base is then coated by electroplating utilizing an acid copper deposit followed by a black chromium electrodeposit to produce the product of the present invention.

3,702,809
METHOD OF PREVENTING ETCH IN PLATING BATHS
Ram Dev Bedi, Southfield, Mich., assignor to M & T Chemicals Inc., New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 221,879, Sept. 6, 1962. This application May 1, 1969, Ser. No. 821,135
Int. Cl. C23b *5/48*
U.S. Cl. 204—15 22 Claims

This invention relates to novel compositions and to the process for electroplating a plate metal onto a cathode of high hydrogen overvoltage basis metal having areas of low cathodic current density whereon plating does not occur and selected areas of high cathode current density which comprises placing only the cathode areas of low cathode current density in intimate electrical contact with a low hydrogen overvoltage metal having a hydrogen overvoltage of less than about 0.3 volt at a current density of 0.1 ampere per square decimeter; and plating the plate metal onto said selected areas of the surface of said cathode, the said cathode areas of low current density remaining substantially free of etching during said plating.

3,702,810
PHOTOCHEMICAL METHOD FOR PREPARING 25-HYDROXYTACHYSTEROL$_3$
Hector F. De Luca and Tatsuo Suda, Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.
No Drawing. Original application Aug. 7, 1969, Ser. No. 848,334. Divided and this application Mar. 2, 1971, Ser. No. 120,312
Int. Cl. B01j *1/10;* **C07c** *169/60, 171/08*
U.S. Cl. 204—158 R 1 Claim

The new compounds 25 - hydroxytachysterol, 25-hydroxydihydrotachysterol$_3$ and methods for preparing same. 25-hydroxydihydrotachysterol$_3$ is characterized by antirachitic activity and by its ability to induce bone mobilization and thereby increase serum calcium concentration indicating its application for the treatment of hypoparathyroidism. 25-hydroxytachysterol$_3$ is a valuable intermediate in the preparation of 25-hydroxydihydrotachysterol$_3$.

3,702,811
PROCESS FOR RENDERING STYRENE COLORLESS BY ARTIFICIAL LIGHT IRRADIATION
Raymond A. Newsom and Richard K. McLeod, Dickinson, and Norman L. Ruland, Houston, Tex., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed July 21, 1971, Ser. No. 164,929
Int. Cl. B01d *1/10;* **C07c** *3/24*
U.S. Cl. 204—158 R 5 Claims

The process for the removal of color from styrene by treating colored styrene with artificial light having a wavelength of from 3000 to 7000 angstroms.

3,702,812

PHOTOPOLYMERIZATION CATALYST COMPRISING FERROCENE AND AN ACTIVE HALOGEN-CONTAINING COMPOUND

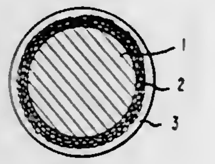
Vincent D. McGinniss, Middleberg Heights, Ohio, assignor to SCM Corporation, Cleveland, Ohio
No Drawing. Filed Dec. 23, 1971, Ser. No. 211,731
Int. Cl. C08d *1/00;* **C08f** *1/16*
U.S. Cl. 204—159.24 **15 Claims**

Photosensitive catalyst systems comprising a minor amount of a ferrocene compound in combination with an activated halogenated compound selected from the group consisting of halosulfonyl compounds, α,β-halosubstituted naphthalene, an allylic activated halogenated compound, and an acyl activated halogenated compound have been found to enhance the polymerization rate of vinyl monomers polymerizable with ultraviolet light.

3,702,813

PROCESS OF INSULATING WIRE BY ELECTROPHORESIS PLUS NON-ELECTROPHORESIS COATING STEPS

Toshihiko Tanaka and Shigeo Masuda, Hyogo, Japan, assignors to Sumitomo Electric Industries Ltd., Osaka, Japan
Continuation-in-part of application Ser. No. 759,974, Sept. 16, 1968. This application Nov. 28, 1969, Ser. No. 880,626
Claims priority, application Japan, Sept. 14, 1967, 42/59,020
Int. Cl. C23b *13/00*
U.S. Cl. 204—181 **10 Claims**

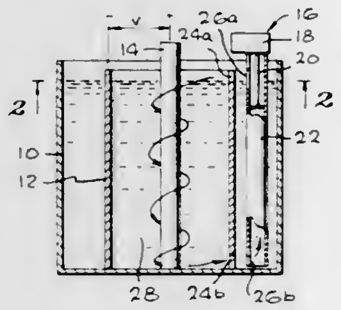


A method for preparing an insulated electrical conductor comprising an electrophoretic coating step, a second coating step and a baking step is disclosed.

3,702,814

ELECTROLYTIC RECOVERY CELL

Harold Mandroian, La Canada, Calif., assignor to Atek Industries, Inc., Hollywood, Calif.
Filed Oct. 28, 1970, Ser. No. 84,742
Int. Cl. B01k *3/00;* **C22d** *1/12*
U.S. Cl. 204—237 **12 Claims**

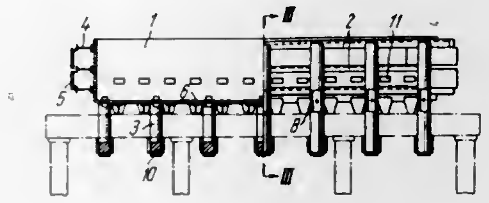


An efficient electrolytic recovery cell which has an anode, a cathode surrounding the anode, and a pump adjacent the cathode for directing a flow of electrolyte into the space between the anode and the cathode. The pump directs the flow of electrolyte in a generally horizontal direction to cause electrolyte to helically descend between the anode and the cathode. The pump has a hollow tube connected to it and running adjacent the cathode to recirculate the electrolyte coming from the bottom of the cathode.

3,702,815

CATHODE CASING OF ELECTROLYZER FOR PRODUCING ALUMINIUM

Vladimir Pavlovich Nikiforov, Vasily Nikolaevich Zaitsev, Viktor Stepanovich Khomyakov, Ilia Genrikhovich Kil, and Igor Kirillovich Tsybukov, Leningrad, U.S.S.R., assignors to Vsesojuzny nauchno-issledovatelsky i Proektny institut aljuminievoi, magnievoi i Elektrodnoi Promyshlennosti, Leningrad, U.S.S.R.
Filed Apr. 22, 1971, Ser. No. 136,524
Claims priority, application Switzerland, Aug. 19, 1970, 1,461,601/70
Int. Cl. C22d *3/02;* **B01k** *3/04*
U.S. Cl. 204—243 R **3 Claims**



A cathode casing of an electrolyzer for producing aluminium which casing consists of a box structure having external horizontal beams disposed along transverse sides and bottom of the box structure and having vertical beams disposed along the longitudinal sides thereof. The vertical beams are hinged with the bottom of the box structure, while the lower ends of these beams are interconnected in pairs through spacer members.

3,702,816

LOW SULFUR COKE FROM VIRGIN RESIDUA

Fred J. Buchmann and Glen P. Hamner, Baton Rouge, La., assignors to Esso Research and Engineering Company
No Drawing. Filed June 29, 1970, Ser. No. 50,960
Int. Cl. C10b *55/00, 37/00*
U.S. Cl. 208—50 **7 Claims**

The sulfur content of coke obtained from high sulfur residua is reduced by oxidation with or without subsequent hydrodesulferization followed by coking and then treating the coke at 1200–1600° F. under high pressures of 50–1000 p.s.i.g. for 30–60 minutes.

3,702,817

PRODUCTION OF LUBRICATING OILS INCLUDING HYDROFINING AN EXTRACT

Billy H. Cummins and William B. Ashton, Nederland, Richard L. Coleman, Port Arthur, and Norman R. Odell, Nederland, Tex., assignors to Texaco Inc., New York, N.Y.
No Drawing. Filed Oct. 6, 1970, Ser. No. 78,614
Int. Cl. C10g *41/00, 23/02*
U.S. Cl. 208—87 **11 Claims**

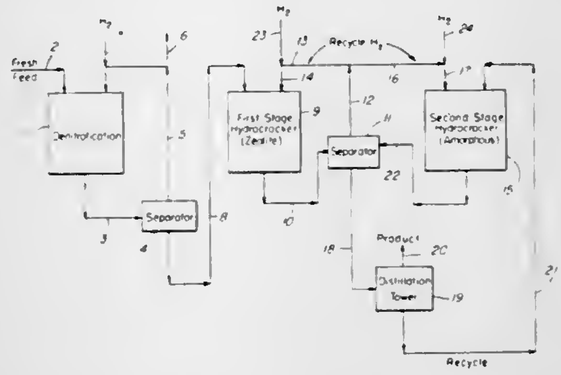
Lube oils of improved viscosity index are produced in good yield by subjecting a lube oil charge stock to solvent extraction, hydrorefining the aromatic-rich extract, recombining the hydrorefined extract with the feed or the raffinate and then dewaxing.

3,702,818

HYDROCRACKING PROCESS WITH ZEOLITE AND AMORPHOUS BASE CATALYSTS

Carl W. Streed, Haddonfield, and Tsoung-Yuan Yan, Gloucester, N.J., assignors to Mobil Oil Corporation
Continuation of application Ser. No. 587,113, Oct. 17, 1966. This application May 23, 1968, Ser. No. 732,496
Int. Cl. C10g *23/00, 13/10*
U.S. Cl. 208—89 **14 Claims**

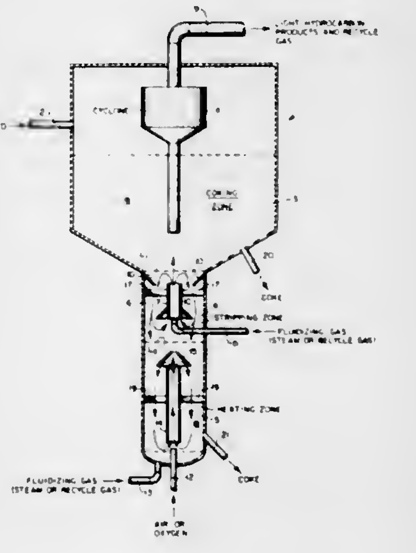
This invention relates to a process for hydrocracking heavy petroleum feeds to produce fuels. Said heavy feed is first partially hydrofined and then hydrocracked over a crystalline aluminosilicate. The effluent of the hydrocracking step is separated into gases, gasoline, and higher boiling material and the higher boiling material is hydrocracked over an amorphous base hydrocracking catalyst and the effluent also separate into various product fractions.



3,702,819

PROCESS FOR COKING HEAVY HYDROCARBONS IN A SINGLE VESSEL

William J. Metrailer, Baton Rouge, La., assignor to Esso Research and Engineering Company
Filed Oct. 15, 1970, Ser. No. 81,016
Int. Cl. C10g *9/28*
U.S. Cl. 208—127 **4 Claims**


LIGHT HYDROCARBON PRODUCTS AND RECYCLE GAS
FEED
CYCLONE
COKING ZONE
COKE
STRIPPING ZONE
FLUIDIZING GAS (STEAM OR RECYCLE GAS)
HEATING ZONE
FLUIDIZING GAS (STEAM OR RECYCLE GAS)
COKE
AIR OR OXYGEN

Process for producing coke and gaseous hydrocarbons wherein heavy carbonaceous material is fed into a coking zone which is heated by hot gases from a gasifying zone and by hot particles from a stripping zone.

ERRATUM

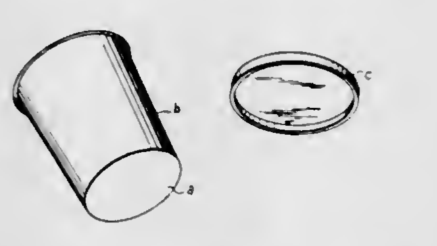
For Class 208—112 see:
Patent No. 3,702,874

3,702,820

SOLVENT EXTRACTION INTO COMESTIBLE SOLUTE

William T. Hough, 312 S. Finley Ave., Basking Ridge, N.J. 07920
Continuation-in-part of application Ser. No. 816,765, Apr. 16, 1969. This application Mar. 27, 1970, Ser. No. 23,434
Int. Cl. B01d *13/00*
U.S. Cl. 210—22 **9 Claims**

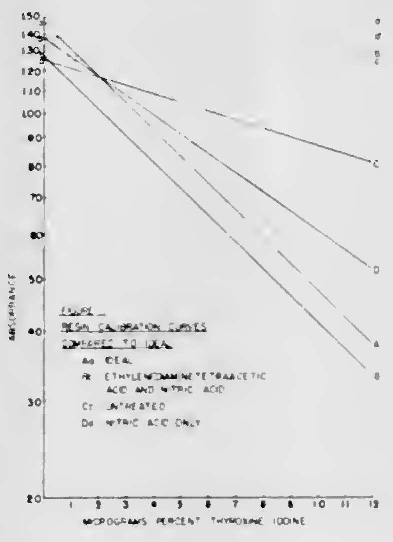
A process for desalting of sea water by regular (natural) osmosis of water from sea water into a more concentrated comestible solution of a comestible food, to form a diluted comestible solution, preferably—before consumption thereof—retaining said diluted comestible solution in a consumption vessel such as a cup, a glass, canteen, or bowl, or the like, from which said diluted solution is consumable.



3,702,821

SERUM THYROXINE ANION EXCHANGE RESIN

Alberto Antonio Fernandez, Canoga Park, Calif., assignor to Biochemical Procedures, Inc., Hollywood, Calif.
Filed Dec. 14, 1970, Ser. No. 97,876
Int. Cl. B01j *1/08*
U.S. Cl. 210—37 **12 Claims**



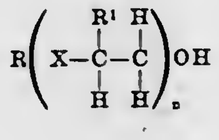
By pretreatment of a strong base quaternary ammonium anion exchange resin with an aqueous solution of a chelating agent, more efficient elution of thyroxine therefrom in biological isolation and analytical procedures is achieved. A further improvement is achieved by pretreatment of the resin with nitric acid.

3,702,822

EXTREME PRESSURE LUBRICANT ADDITIVES

Floyd R. Hansen, Northfield, Ohio, assignor to Ferro Corporation, Cleveland, Ohio
No Drawing. Continuation of abandoned application Ser. No. 826,284, May 20, 1969. This application May 7, 1971, Ser. No. 141,386
Int. Cl. C10m *1/26, 1/24*
U.S. Cl. 252—37 **9 Claims**

Extreme pressure lubricant additives comprising the reaction product of (a) a lead compound which if it contains an anion, the anion is removed by distillation and (b) an organic mono carboxylic acid of from 8 to 20 carbon atoms which can be a branched chain fatty acid, unsaturated acid, cyclic acid, or its glyceride in an amount less than about 50% of the stoichiometric equivalent of said lead compound and (c) an alcohol of the formula:



$$R\left(X-\overset{R^1}{\underset{H}{C}}-\overset{H}{\underset{H}{C}}\right)_n OH$$

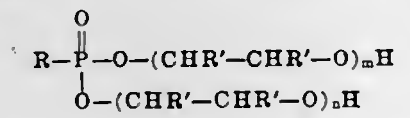
wherein R is hydrogen or a hydrocarbon radical of from 1 to 8 carbon atoms inclusive, X is a chalcogen, *n* is an integer of from 1 to 3 inclusive, and R^1 is hydrogen or can be taken together with R to form a heterocyclic ring when *n* is 1, which ring can be substituted.

3,702,823
FLUOROSILICONE LUBRICANTS CONTAINING 2-NITROMESITYLENE
Yung Ki Kim, % Dow Corning Corporation, Midland, Mich. 48640
No Drawing. Filed July 28, 1971, Ser. No. 167,036
Int. Cl. C10m *1/10, 1/20, 1/32*
U.S. Cl. 252—49.6 **6 Claims**

Minor amounts of 2-nitromesitylene are added to fluorosilicone lubricants to improve the steel on brass and steel on aluminum anti-wear characteristics.

3,702,824
FRICTION REDUCING AGENT FOR LUBRICANTS
Raymond C. Schlicht, Fishkill, N.Y., assignor to Texaco Inc., New York, N.Y.
No Drawing. Filed June 12, 1970, Ser. No. 45,931
Int. Cl. C10m *1/46*
U.S. Cl. 252—49.8 **7 Claims**

Hydroxyalkyl esters of alkanephosphonates represented by the formula:



$$\mathrm{R-\overset{\overset{O}{\|}}{\underset{\underset{O-(CHR'-CHR'-O)_nH}{|}}{P}}-O-(CHR'-CHR'-O)_mH}$$

in which R is a substantially straight chain alkyl radical having from about 11 to 40 carbon atoms, R' is hydrogen or an alkyl radical having from 1 to 20 carbon atoms, *m* is an integer from 1 to 10 and *n* is 0 or an integer from 1 to 10, and a lubricating oil composition containing a hydroxyalkyl ester of alkanephosphonate.

3,702,825
AUXILIARIES FOR CLEANING CYLINDERS AND ROLLERS OF DYEING AND DRYING AGGREGATES IN TEXTILE PLANTS
Hans-Ulrich von der Eltz and Gerhard Weckler, both % Farbwerke Hoechst AG, Frankfurt am Main, Germany
No Drawing. Filed Oct. 17, 1969, Ser. No. 867,363
Claims priority, application Germany, Oct. 22, 1968, P 18 04 414.9
Int. Cl. C11d
U.S. Cl. 252—89 **5 Claims**

An auxiliary composition comprising a mixture of an oxalkylated aliphatic alcohol and a polyalkylene glycol. This auxiliary composition may be used for cleaning heavily soiled cylinders and rollers of dyeing and drying aggregates in textile plants.

3,702,826
SCOURING CLEANSER
Mark J. Koceich, Franklin Park, and William Chirash, New Providence, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
No Drawing. Filed Jan. 25, 1971, Ser. No. 109,607
Int. Cl. C11d *7/54*
U.S. Cl. 252—99 **4 Claims**

A scouring cleanser containing an abrasive material, a hypohalide-liberating bleaching agent, and a water soluble organic detergent, which has improved stain removal properties due to the incorporation therein of a combination of phosphate builder salts and an alkali metal carbonate.

3,702,827
DISMUTATION OF OLEFINS
Robert P. Arganbright, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.
No Drawing. Filed July 23, 1969, Ser. No. 844,207
Int. Cl. B01j *11/78*
U.S. Cl. 252—441 **5 Claims**

Using as a catalyst MoO_3-Re_2O_7 (weight ratio approximately 10:1) on an alumina support it is possible to carry out dismutation reactions of C_2–C_{20} acyclic monoolefins at low temperatures and much smaller amounts of Re_2O_7 than are conventionally necessary, e.g., prior art required 10 percent MoO_3 at 150° C. or 20 percent Re_2O_7 at 38°; whereas the present invention requires 10 percent MoO_3-1 percent Re_2O_7 at 38° C. to give higher conversion and yields. By modifying this catalyst with a small amount of fluoride ion isobutylene which otherwise is subject to oligomerization can be dismutated with C_3–C_{20} acyclic monoolefins. The products are different and more desirable olefins than the starting materials.

3,702,828
EUROPIUM-ACTIVATED BARIUM AND STRONTIUM, CALCIUM ALUMINUM FLUORIDE PHOSPHORS
Mary V. Hoffman, South Euclid, Ohio, assignor to General Electric Company
No Drawing. Filed Mar. 25, 1971, Ser. No. 128,186
Int. Cl. C09k *1/04*
U.S. Cl. 252—301.4 R **7 Claims**

Europium-activated calcium aluminum fluoride phosphors of barium and strontium are described which have been found to be efficient producers of sharp line ultraviolet emission resulting from 4f to 4f energy level transitions in the divalent europium, as contrasted to previously known luminescent materials utilizing divalent europium as an activator wherein the emission is due to 5d to 4f energy level transitions. Solid-state and precipitation methods of producing the new phosphors are disclosed. These materials are useful as phosphors in cathode-ray tubes, lamps and other applications.

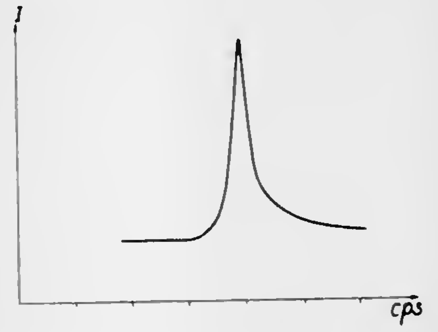
3,702,829
MICROSCOPIC CAPSULES AND PROCESS OF MAKING SAME
Lloyd D. Taylor, Everett, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
No Drawing. Original application Mar. 25, 1963, Ser. No. 267,847, now Patent No. 3,396,026, dated Aug. 6, 1968. Divided and this application May 15, 1968, Ser. No. 729,397
Int. Cl. B01j *13/02;* **B44d** *1/02*
U.S. Cl. 252—316 **4 Claims**

Microscopic capsules having walls which include a substantially continuous polymeric layer comprising a coacervate containing a low isoelectric point gelatin and a gelatin derivative, which derivative comprises the reaction product of gelatin and a carboxylated derivatizing agent which will not substantially cross-link said gelatin, and which reacts with at least a portion of the gelatin's amino groups, surrounding a nucleus comprising a water-immiscible medium.

3,702,830
STABILIZER SYSTEM
John Bohemen, Leatherhead, England, assignor to BP Chemicals Limited, London, England
No Drawing. Filed Sept. 21, 1970, Ser. No. 74,206
Claims priority, application Great Britain, Oct. 14, 1969, 50,385/69
Int. Cl. B01j *1/16*
U.S. Cl. 252—404 **7 Claims**

A synergistic stabilizer system comprising a mixture of (a) a benzoquinone compound selected from benzoquinone or a benzoquinone derivative containing at least one electron withdrawing substituent and (b) a phenolic compound having a transfer constant, as determined in monomeric vinyl acetate, at least 10 times greater than that of phenol. The stabilizer system is particularly useful for inhibiting polymerisation of ethylenically unsaturated monomers having negative Alfrey-Price *e* values and Q values less than 2, for example vinyl acetate.

3,702,831
NUCLEAR MAGNETIC RESONANCE MAGNETOMETER SOLUTIONS CONTAINING NITROXIDE FREE RADICALS HAVING DEUTERIUM ATOMS
Robert Chiarellier, Residence Percevaliere E 154, 38 Seyssinet-Pariset, France; Andre Rassat, 5 Rue Marcellin Berthelot, 38 Grenoble, France; René Besson, 53 chemin des Ayguinards, 38 Meylan, France; and Antoine Salvi, 20 Rue Gabriel Peri, 38 Fontaine, France
Filed Oct. 12, 1970, Ser. No. 79,977
Claims priority, application France, Oct. 15, 1969, 6935278
Int. Cl. C12k *1/04;* **G01n** *33/16;* **G21h** *5/00*
U.S. Cl. 252—408 **5 Claims**



A magnetometer for measuring a weak magnetic field and its variations includes a solution which comprises a solvent with atomic nuclei (for instance protons) having non-zero magnetic moment and an organic hydrogenated free radical having unpaired electrons dissolved in the solvent. The free radical comprises a nitroxide group, the nitrogen atom of which is exclusively linked to two carbon atoms each linked with three other carbon atoms. For narrowing and enhancing the resonance lines, a major portion at least of the hydrogen atoms of the free radical are deuterium atoms. Radicals such as ditertiobutylnitroxide (DTBN) and radicals having a hexagonal heterocycle the heteroatom of which is nitrogen (for instance tetramethyl-2-2-6-6-aza-1-cyclohexanone-3-nitroxide 1) may be used.

3,702,832
PYROLYTIC CARBON FIBER
Igor Nikolaevich Ermolenko, Remma Nikolaevna Sviridova, and Zoya Ivanovna Kuvaeva, Minsk, U.S.S.R., assignors to Institut Obschei I Neorganicheskoi khimiii Akademii, Nauk BSSR, Minsk, U.S.S.R.
No Drawing. Filed Apr. 8, 1969, Ser. No. 814,457
Int. Cl. C01b *31/08*
U.S. Cl. 252—423 **9 Claims**

Pyrolytic carbon fiber containing cation-exchange acid residues, such as sulphonic, carboxylic and phosphate groups, and a method for the production of pyrolytic carbon fiber which comprises subjecting an organic fibrous material to pyrolysis, followed by sulphonating, oxidizing or phosphorylating the resultant pyrolytic fiber.

3,702,833
CURABLE FLUOROPHOSPHAZENE POLYMERS
Selwyn H. Rose, Beachwood, and Kennard A. Reynard, Mentor, Ohio, assignors to Horizons Incorporated, a division of Horizons Research Incorporated
No Drawing. Filed May 1, 1970, Ser. No. 33,871
Int. Cl. C08d; C08f *25/00;* **C08g**
U.S. Cl. 260—2 P **6 Claims**

Improved P-N polymers in which at least some of the groups attached to the P atom contain reactive sites whereby the properties and the polymer may be modified by crosslinking and/or curing.

3,702,834
PRODUCTION OF ORGANIC ACIDS
Bertram Yeomans, East Yorkshire, England, assignor to BP Chemicals (U.K.) Limited, London, England
No Drawing. Filed Sept. 8, 1969, Ser. No. 856,204
Claims priority, application Great Britain, Sept. 14, 1968, 43,843/68
Int. Cl. C07c *55/00, 57/00*
U.S. Cl. 260—537 R **9 Claims**

A process in which a neo-acid is reacted with a compound containing one or more isoalkyl groups in the presence of a strong acid, preferably sulphuric acid, to produce a second neo-acid.

3,702,835
ROOM TEMPERATURE VULCANIZABLE SILICONE ELASTOMER CONTAINING MOLYBDENUM BLUE
Thomas W. Greenlee, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
No Drawing. Filed June 18, 1971, Ser. No. 154,649
Int. Cl. C08h *9/00*
U.S. Cl. 260—18 S **5 Claims**

Room temperature vulcanizable silicone elastomer composition prepared by mixing a hydroxyl endblocked polydiorganosiloxane, an alkoxy silicon compound, a metal salt of a carboxylic acid and molybdenum blue has increased tear strength and modulus.

3,702,836
POLYMER DISPERSIONS
Derek John Walbridge, Beaconsfield, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed July 6, 1970, Ser. No. 52,693
Claims priority, application Great Britain, July 4, 1969, 33,871/69
Int. Cl. C08f *47/20;* **C08g** *53/18;* **C08j** *1/48*
U.S. Cl. 260—29.1 R **7 Claims**

Physical properties, e.g. gloss and adhesion, of coatings obtained from coating compositions based on dispersions of film-forming thermoplastic non-crosslinkable polymer in organic liquid are improved when the stabiliser for the disperse particles of polymer contains reactive crosslinkable groups which are crosslinked at the time of application of the coating composition by a crosslinking agent present in the organic liquid.

3,702,837
HYDROXYPHENYLALKYLENEYL ISOCYANURATE SYNERGIST COMBINATIONS
Jack C. Gilles, Shaker Heights, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 1,927, Dec. 29, 1969, which is a division of application Ser. No. 770,863, Oct. 25, 1968. This application Dec. 1, 1970, Ser. No. 94,219
The portion of the term of the patent subsequent to Jan. 1, 1989, has been disclaimed
Int. Cl. C08f *45/60;* **C10m** *1/32;* **C11b** *5/00*
U.S. Cl. 260—45.8 N **4 Claims**

Novel hydroxyphenylalkyleneyl isocyanurate synergist combinations have been prepared. These synergist compositions effectively stabilize α-monoolefin homopolymers and copolymers against the deleterious effects of oxygen, heat and light.

3,702,838
LEWIS ACID CATALYZED DIACYL CHLORIDE-DIPHENOL POLYESTERIFICATION

Donald Richard Wilson, Fairport, N.Y., assignor to E. I. du Pont d Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 779,090, Oct. 23, 1968. This application Aug. 26, 1970, Ser. No. 67,251

Int. Cl. C08g *17/003*

U.S. Cl. 260—47 C **24 Claims**

Reaction of a diacyl chloride and a diphenol or a bisphenol is conducted under anhydrous conditions, in a chlorinated organic solvent in the presence of a catalytic amount of anhydrous aluminum chloride, anhydrous aluminum bromide, anhydrous aluminum iodide, antimony pentafloride, antimony pentachloride, antimony pentabromide, ferric chloride, ferric bromide, indium trichloride, indium tribromide, zirconium chloride, zirconium bromide, stannic chloride, stannic bromide, titanum tetrachloride, titanium tetrabromide, gallium trichloride, gallium tribromide, isoquinoline, quinuclidine hydrochloride, a trialkyl phosphine, a triaryl phosphine or an alkyl-substituted imidazole.

3,702,839
PROCESS FOR PREPARING 2-OXAZOLIDONE POLYMERS

David Gerald Glasgow, Centerville, and Archie E. Follett, Dayton, Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.

No Drawing. Filed July 25, 1969, Ser. No. 845,037

Int. Cl. C08g *22/40*

U.S. Cl. 260—77.5 AB **3 Claims**

2-oxazolidone polymers are prepared from diisocyanates and diepoxides by heating at 25–250° C. in the presence of a phosphonium salt.

3,702,840
REDUCTION OF POLYMER BUILD-UP IN ETHYLENE COPOLYMERIZATION

Bart A. Diliddo, Seven Hills, and Bernard F. Cinadr, Brecksville, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Oct. 31, 1968, Ser. No. 772,373

The portion of the term of the patent subsequent to Feb. 22, 1989, has been disclaimed

Int. Cl. C08f *1/11, 15/40*

U.S. Cl. 260—80.78 **8 Claims**

In the suspension polymerization of ethylene, propylene and a polyene in the substantial absence of extraneous diluents, particularly in a continuous system, where polymer build-up interferes with the polymerization reaction and causes mechanical problems, the amount of polymer build-up is reduced by including in the polymerization system minor amounts of a solubilizing agent which comprises less than 30% of the total hydrocarbons present in the reaction mixture.

3,702,841
INTUMESCENT PAINT CONTAINING NITRILE RUBBER

Paul M. Sawko, San Jose, Calif., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

No Drawing. Filed Feb. 12, 1971, Ser. No. 115,082

Int. Cl. C08d *9/10, 13/10;* **C08g** *37/18*

U.S. Cl. 260—2.5 F **4 Claims**

An intumescent agent is provided which contains paranitroaniline-bisulfate dispersed in a mixture of an acrylonitrile-butadiene copolymer and a phenolic resin. The adhesion and water resistance are both greater than intumescent agents known in the past.

3,702,842
COPOLYMERS FROM PARA TERTIARY BUTYL STYRENE AND DIISOBUTYLENE AND METHOD FOR PRODUCING SAME

Bernard J. Davis, Biloxi, and Wesley J. Ranson, Gulfport, Miss., assignors to Reichhold Chemicals, Inc., White Plains, N.Y.

No Drawing. Filed Sept. 17, 1971, Ser. No. 181,593

Int. Cl. C08f *19/04*

U.S. Cl. 260—88.2 C **10 Claims**

Resinous copolymers of para tertiary butyl styrene and diisobutylene are prepared by reacting (A) para tertiary butyl styrene and (B) diisobutylene in the presence of a Friedel-Crafts catalyst at a temperature ranging from about 0° C. to about 70° C. and recovering the resinous copolymers. These resinous copolymers are colorless, and have softening points up to about 140° C. and are soluble down to about 0° C. in odorless low Kouri Butnol (KB) value solvents.

3,702,843
NITRITE, NITRATE AND SULFATE ESTERS OF POLYHYDROXY POLYMERS

Richard G. Schweiger, 114 Lord Ave.,
Muscatine, Iowa 52761

No Drawing. Filed May 25, 1970, Ser. No. 40,442

Int. Cl. C08f *27/12*

U.S. Cl. 260—91.3 VA **5 Claims**

The novel polymer nitrite ester compounds and the process of preparing them by nitrosating a mixture containing a polyhydroxypolymer and a suitable solvent at a temperature of 0–50° C. Further, the novel process of preparing a water soluble polymer nitrate ester by heating the corresponding polymer nitrite ester in the presence of nitric acid to a temperature ranging from 60–110° C. for a period of one-quarter to two hours.

Also an integral part of this invention are novel polymer sulfate ester salts and the process of preparing them comprising the steps of (1) sulfating the corresponding polymer nitrite ester at a temperature ranging from about 0 to about 25° C. to obtain the corresponding polymer nitrite sulfuric acid ester, (2) reacting the reaction mixture of step 1 with a protic solvent to obtain the polymer sulfate ester, and (3) neutralizing or slightly alkalizing the polymer sulfate ester reaction mixture with an alkali to obtain the corresponding polymer sulfate ester salt. The polymer sulfate ester salts have valuable thickening properties useful to form viscous products.

3,702,844
POLYVINYL ALCOHOL-PHOSPHORIC ACID FILMS

Ronald F. Ofstead, Maplewood, and Ramsis Gobran, Roseville, Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation-in-part of application Ser. No. 798,482, Sept. 19, 1968, which is a division of application Ser. No. 504,139, Oct. 23, 1965. This application Aug. 17, 1970, Ser. No. 64,576

Int. Cl. C08f *29/36, 45/72*

U.S. Cl. 260—91.3 VA **3 Claims**

Coatings and self-supporting films of polyvinyl alcohol are provided, said films and coatings comprising polyvinyl alcohol containing from 1 to 20 percent of orthophosphoric acid, and said film being colorless, transparent, semi-permeable, and strong. The films and coatings are dried at or near room temperature after being coated.

3,702,845
CONTINUOUS PRODUCTION OF ETHYLENE HOMOPOLYMERS

Klaus Steigerwald and Oskar Buechner, Ludwigshafen, and Friedrich Urban and Helmut Pfannmueller, Limburgerhof, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Feb. 11, 1970, Ser. No. 10,587

Claims priority, application Germany, Feb. 22, 1969, P 19 08 962.4

Int. Cl. C08f *1/60, 1/80, 3/04*

U.S. Cl. 260—94.9 R **6 Claims**

Production of ethylene homopolymers having a specific density by polymerization of ethylene under the action of organic peroxides and oxygen as free-radical-generating polymerization initiators and of polymerization modifiers at elevated temperature and superatmospheric pressure in a tubular reactor having two successive reaction zones, a mixture of ethylene, polymerization initiator and polymerization modifier being introduced continuously at the beginning of each reaction zone. Oxygen as polymerization initiator and a mixture of a polymerization modifier having a specific relatively low C_s value and a polymerization modifier having a specific relatively high C_s value are used in the first reaction zone, and an organic peroxide having a specific half value temperature as polymerization initiator and a mixture of a polymerization modifier having a specific relatively low C_s value and a polymerization modifier having a specific relatively high C_s value are employed in the second reaction zone. The ethylene homopolymers obtained have a wide molecular weight distribution and are practically devoid of very high molecular weight constituents.

3,702,846
PREPARING DIMERS OF 4,4'-AZODIANILINE

Hartwig C. Bach, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 779,243, Nov. 26, 1968. This application Apr. 26, 1971, Ser. No. 137,669

Int. Cl. C09b *43/06*

U.S. Cl. 260—169 **3 Claims**

4,4'-azodianiline is selectively dimerized in yields of at least 75% by reacting 4,4'-azo-dianiline with molecular oxygen in the presence of a catalytic amount of a cuprous or cupric salt and a nitrogen base as the reaction medium at temperatures of −10° C. to 50° C.

3,702,847
PREPARATION OF CARBOXYHYDROXY ALKYL STARCH DERIVATIVES

Robert J. Hathaway, Decatur, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Filed Dec. 16, 1970, Ser. No. 98,905

Int. Cl. C08b *19/06*

U.S. Cl. 260—233.3 R **15 Claims**

Chlorohydroxy acidic reagents, such as chlorohydroxypropionic acid (CHP) and chlorohydroxysuccinic (CHS) acids produced by chlorination of acrylic acid and maleic acids, respectively, are used to introduce carboxyl groups into starch in the presence of an alkaline catalyst. Some of the resulting carboxyhydroxy alkyl starch derivatives, when further modified, are useful in paper manufacture as filler retention aids. It is expected that the modified starches of the invention will also be useful in foods. Cleavage of the ether linkage should take place during metabolism, and the reaction by-products should include glyceric and tartaric acid, both of which are naturally occurring metabolites. The starch derivatives made by the method of this invention exhibit anionic characteristics, and when chlorohydroxypropionic acid reagent is reacted with a cationic corn starch, the resulting product is a substantially improved filler retention aid.

3,702,848
PROCESS FOR THE CONVERSION OF 3-ENOL ETHERS OF 3-KETO-Δ^4-STEROIDS UNSUBSTITUTED AT C_4 AND C_6 TO THE CORRESPONDING 3 - KETO - Δ^4-6β - (N-DISUBSTITUTED)AMINOMETHYL COMPOUNDS

Verlan H. Van Rheenen, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Nov. 19, 1969, Ser. No. 878,217

Int. Cl. C07c *113/10*

U.S. Cl. 260—239.5 **9 Claims**

This invention relates to a novel and general process for the conversion of the 3-enol ethers (1) of 3-keto-Δ^4-steroids, unsubstituted at the 4 and 6 positions, of the androstane, 19-norandrostane, pregnane, 19-norpregnane, stigmastane and spirostane series into the corresponding 3-keto-Δ^4-6β-(N-disubstituted) aminomethyl derivatives (III). The compounds of Formula III have anabolic, androgenic, anti-fertility, anti-inflammatory and estrogenic activities, and are consequently useful in treating mammals, including humans, birds and other animals in those conditions and/or ailments where such activities are desired. For example, in preventing pregnancy, increasing pelt size in female mink, treating arthritis, osteoporosis, etc. The compounds of Formula III are additionally useful as intermediates in the preparation, by known methods, of the physiologically active and therapeutically useful 6-methyl steroids, such as medroxyprogesterone acetate (6α-methyl-17α-hydroxy - 4 - pregnene - 3,20 - dione-17-acetate), dimethisterone [6α-methyl-17β-hydroxy-17α-(1-propynyl)-4-androsten - 3 - one], methylprenisolone (6α-methyl-11β,17α,21-trihydroxy - 1,4 - pregnadiene - 3,20-dione), fluoromethylone (6α-methyl-9α-fluoro-11β,17α-dihydroxy-1,4-pregnadiene-3,20-dione), etc.

3,702,849
4-(ISOQUINOLIN-1-YL) PIPERAZINE-1-CARBOXYLIC ACID ESTERS

Timothy H. Cronin, Niantic, and Hans-Jurgen E. Hess, Old Lyme, Conn., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Application Oct. 26, 1967, Ser. No. 678,191, now Patent No. 3,517,005, dated Jan. 23, 1970, which is a continuation-in-part of application Ser. No. 590,494, Oct. 31, 1966. Divided and this application Mar. 17, 1970, Ser. No. 20,381

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 C **4 Claims**

4-(isoquinolin - 1 - yl) - piperazine - 1 - carboxylic acid, esters and 1 - amino - 6,7 - dialkoxyisoquinolines and their pharmaceutically-acceptable acid addition salts. Compounds manifest bronchodilator activity and antihypertensive response with minimal adverse effects upon administration to afflicted subjects.

3,702,850

1,2,3,6-TETRAHYDROPYRIDINE DERIVATIVES

Andrea Pedrazzoli and Leone Dall Asta, Milan, Italy, assignors to Societe d'Etudes de Recherches et d'Applications Scientifiques et Medicales E.R.A.S.M.E., Paris, France

No Drawing. Original application Aug. 21, 1967, Ser. No. 661,794. Divided and this application Nov. 20, 1970, Ser. No. 91,523

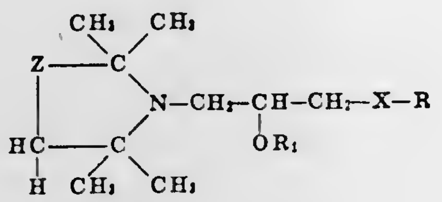
Claims priority, application Great Britain, Aug. 23, 1966, 37,833/66; Nov. 21, 1966, 52,071/66

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 G **6 Claims**

The present invention relates to novel derivatives of propane-2,3-diol and 3-mercapto-propane-2-ol, which are therapeutically useful, and their process of preparation.

The compounds of the invention have the following general formula:



wherein:

Z is the group —CH═CH—

R is alkyl of 1 to 4 carbon atoms; phenyl, phenyl substituted at least by one of lower alkyl, chloro, methoxy or benzyloxy; naphthyl; benzyl; phenethyl; diphenylmethyl; pyridyl;

X is O or S; and

R_1 is hydrogen atom or —COR_2 in which R_2 is phenyl substituted by at least one of a chlorine-atom or methoxy; phenoxymethyl, chlorophenoxymethyl; styryl or pyridyl.

3,702,851

3 - THIA - 1 - CYCLOHEXENE AND 3,6-DITHIA-1-CYCLOHEXENE-1,2 DICARBOXIMIDE METHYL ESTERS OF PYRETHRIC CHRYSANTHEMIC AND RELATED ACIDS

Toshio Mizutani, Hirakata-shi, Nobushige Itaya, Minoo-shi, Shigeyoshi Kitamura, Toyonaka-shi, Keimei Fujimoto, Kobe, and Yositosi Okuno, Toyonaka-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

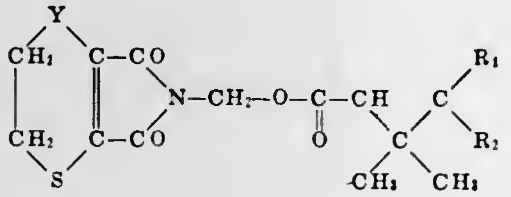
No Drawing. Filed Jan. 26, 1970, Ser. No. 5,975

Claims priority, application Japan, Feb. 1, 1969, 44/7,453; Feb. 26, 1969, 44/14,946

Int. Cl. C07d *27/10*

U.S. Cl. 260—326.3 **10 Claims**

A novel cyclopropanecarboxylic acid ester having the formula,



wherein R_1 is hydrogen atom or methyl, R_2 is methyl, 2-methyl-1-propenyl or 2-methoxycarbonyl-1-propenyl when R_1 is hydrogen atom, and R_2 is methyl when R_1 is methyl, and Y is methylene or sulfur atom; which ester is useful for an insecticide and is prepared by the esterification of the cyclopropanecarboxylic acid or reactive derivatives thereof with the hydroxy- or halo-methylimide.

3,702,852

CARBOXYLATED DIBENZOXAZEPINES AND DIBENZOTHIAZEPINES

Harry Louis Yale and Remesh Petigara, New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Feb. 24, 1970, Ser. No. 13,767

Int. Cl. A61k *27/00;* **C07d** *87/64, 93/42*

U.S. Cl. 260—327 B **7 Claims**

Disclosed herein are dibenzoxazepine and dibenzothiazepine derivatives which are substituted in the 5-position with a carboxyalkylene group. These compounds have been found to stimulate the central nervous system and to produce analgesia.

3,702,853

CERTAIN 5-SUBSTITUTED TETRAHYDROISO-BENZOFURAN-1-ONES

John A. Edwards, Los Altos, and John H. Fried, Palo Alto, Calif., assignors to Syntex Corporation, Panama, Panama

No Drawing. Continuation-in-part of application Ser. No. 697,010, Jan. 11, 1968. This application Jan. 13, 1970, Ser. No. 2,675

Int. Cl. C07d *5/40*

U.S. Cl. 260—343.3 **4 Claims**

Production of substituted cyclohexene carboxylic acids and novel substituted cyclohexene carboxylic acids and derivatives thereof useful as antifertility agents.

3,702,854

SYNTHESIS OF 2-PHENYL BENZOFURANS

Leonard Jurd, 1054 Park Hills Road, Berkeley, Calif. 94708

No Drawing. Filed Mar. 27, 1970, Ser. No. 23,517

Int. Cl. C07d *5/42*

U.S. Cl. 260—346.2 R **3 Claims**

Flavylium salts are converted into benzofuran derivatives which are unsubstituted at the 3 position. The key item of the synthesis is that intermediates are not isolated: Steps of oxidation, alkali treatment, and acid treatment are applied in sequence without isolating any of the intermediates whereby the desired end product is obtained directly and in high yield.

3,702,855

OLEFIN EPOXIDATION

Charles S. Bell, Berkeley, and Harald P. Wulff, Alameda, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed June 26, 1970, Ser. No. 50,311

Int. Cl. C07d *1/08, 1/12*

U.S. Cl. 260—348.5 L **6 Claims**

Olefin oxides are produced by the reaction of an organic hydroperoxide and an olefinically unsaturated compound in the presence of a catalyst selected from a metal silicide of Ti, Zr, V, Nb, Cr, Mo and W.

3,702,856

PREPARATION OF ALKYL HALIDES, CARBOXYLATES AND ALCOHOLS

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Nov. 19, 1969, Ser. No. 878,231

Int. Cl. C07c *17/08;* **C11c** *3/00*

U.S. Cl. 260—410.9 R **16 Claims**

Alkyl halides, carboxylates and/or alcohols are prepared by contacting ethylene or propylene and a hydrohalic acid, carboxylic acid and/or water with a reaction medium comprising a Group VIII noble metal at a temperature of 100°–400° C. A typical process comprising contacting ethylene with an acidic aqueous medium to produce secondary butyl alcohol.

3,702,857

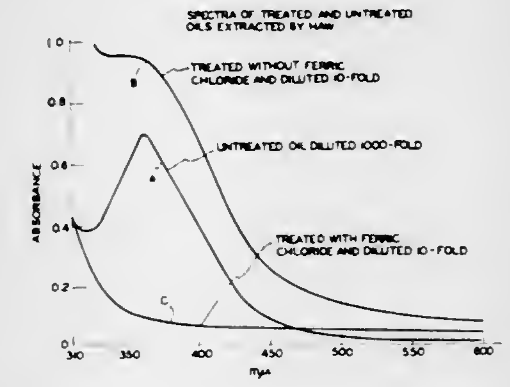
DECOLORIZATION OF COTTONSEED OIL WITH FERRIC CHLORIDE

Lawrence Y. Yatsu, New Orleans, Thomas J. Jacks, Metairie, and Thomas P. Hensarling, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture

Filed Mar. 10, 1970, Ser. No. 18,148

Int. Cl. C11b *3/06*

U.S. Cl. 260—426 **2 Claims**



Cottonseed miscella was treated with ferric chloride to form an iron-gossypol complex. The treated miscella was then extracted with alkaline water. The supernatant liquid filtered through bleaching clay produced an oil containing virtually no light-absorbing color bodies and a product that compared favorably, colorwise, with commercial oil.

3,702,858

HYDROCARBYL TIN CARBOXYLATE

Toshio Seki, Osaka, Yasuo Hiyama, Amagasaki, and Yoshitaka Sato, Moriguchi, Japan, assignors to Nitto Kasei Co., Ltd., Osaka, Japan

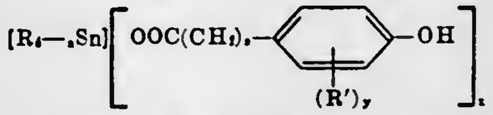
No Drawing. Continuation-in-part of application Ser. No. 879,977, Dec. 9, 1969, which is a division of application Ser. No. 615,895, Feb. 14, 1967, now Patent No. 3,511,803. This application Apr. 16, 1971, Ser. No. 134,844

Claims priority, application Japan, Feb. 15, 1966, 41/8,605

Int. Cl. C07f *7/22*

U.S. Cl. 260—429.7 **3 Claims**

Novel organotin compounds are provided for stabilizing synthetic resins against degradation by thermal oxidation, said compounds having the formula



wherein R is selected from the group consisting of alkyl of from 1 to 18 carbon atoms, and benzyl, R' is tertiary butyl, *x* is an integer of 1 to 3 inclusive, *y* is 2, and *z* is an integer of 0 or 2, at least one R' group being adjacent to —OH group in the phenolic group.

3,702,859

SILOXANE POLYMERS FOR SOIL-REPELLENT AND SOIL RELEASE TEXTILE FINISHES

Allen G. Pittman, El Cerrito, and William L. Wasley, Berkeley, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application May 19, 1970, Ser. No. 38,899. Divided and this application July 9, 1971, Ser. No. 161,358

Int. Cl. C07f *7/08, 7/18*

U.S. Cl. 260—448.2 B **6 Claims**

Fluorocarbon silanes are copolymerized with silanes which contain two or more alkyleneoxy groups. The copolymers are useful for application to fibrous materials to provide both soil repellency and soil releasability.

3,702,860

UREA-FUNCTIONAL ORGANOSILICON COMPOUNDS

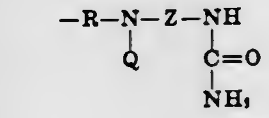
Robert H. Krahnke, % Dow Corning Corporation, Midland, Mich. 48640

No Drawing. Filed Oct. 12, 1970, Ser. No. 80,191

Int. Cl. C07f *7/10, 7/18*

U.S. Cl. 260—448.8 R **4 Claims**

Silanes and siloxanes having urea functionality in the form of a



$$-R-\underset{\substack{|\\ Q}}{N}-Z-\underset{\substack{|\\ C=O\\ |\\ NH_2}}{NH}$$

in which R is a divalent hydrocarbon radical free of aliphatic unsaturation of from 3–18 inclusive carbon atoms, Z is an ethylene, propylene, or substituted ethylene or propylene radical and Q is a hydrogen atom or a urea radical, are useful as sizing agents for glass fibers and as additives in the preparation of crease resistant resins.

3,702,861

PREPARATION OF N-ALKYL ANILINO-METHYLENEMALONONITRILES

Robert K. Howe, Bridgeton, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 681,578, Nov. 8, 1967. This application Aug. 3, 1970, Ser. No. 60,720

Int. Cl. C07c *121/78*

U.S. Cl. 260—465 E **10 Claims**

Preparation of N-alkyl derivatives of anilinomethylenemalononitriles by reacting an anilinomethylenemalononitriles with a dialkyl sulfate.

3,702,862

ALKYL- AND HALO-SUBSTITUTED PHENOXY BENZONITRILES

Akihiko Mine, Minoo-shi, Katsuzo Kamoshita and Naganori Hino, Toyonaka-shi, and Shinji Nakai, Takarazuka-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

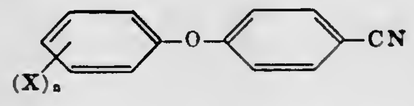
No Drawing. Filed Mar. 10, 1969, Ser. No. 805,882

Claims priority, application Japan, Mar. 13, 1968, 43/16,847

Int. Cl. A01n *9/20;* **C07c** *121/74*

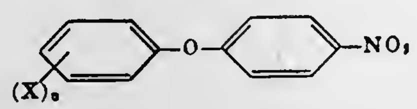
U.S. Cl. 260—465 F **10 Claims**

New diphenyl ethers having the general formula,



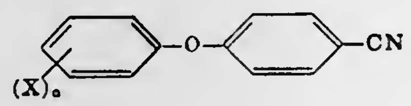
wherein X is a member or the same or different members selected from the group consisting of alkyl groups having

1 to 4 carbon atoms and halogen atoms, and *n* is an integer of 1–3, which are prepared by reducing substituted phenyl-4′-nitrophenyl ether having the general formula,



wherein X and *n* have the same significances as mentioned above, diazotizing and then subjecting to Sandmeyer or Gattermann reaction, or by reacting an alkali metal salt of a substituted phenol, or a mixture of a substituted phenol and a hydroxide or carbonate of an alkali metal with p-halogen-substituted benzonitrile at a temperature of 100° to 200° C. in a solvent of dimethylformamide or dimethylsulfoxide.

A new herbicidal composition comprising a herbicidal amount of at least one compound represented by the formula,



wherein X and *n* have the same significances as mentioned above.

3,702,863
PHENOXYALKANOYLAMIDOOXYALKANOIC COMPOUNDS

Ralph P. Neighbors, Olathe, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

No Drawing. Division of application Ser. No. 759,761, Sept. 13, 1968, now Patent No. 3,543,305, which is a continuation-in-part of application Ser. No. 668,180, Sept. 15, 1967, now Patent No. 3,520,674, which in turn is a continuation-in-part of application Ser. No. 374,813, June 12, 1964, now Patent No. 3,457,063. This application Jan. 21, 1970, Ser. No. 4,750

The portion of the term of the patent subsequent to June 10, 1986, has been disclaimed

Int. Cl. C07c *101/00*

U.S. Cl. 260—471 A **4 Claims**

Both broadleaf weeds and common noxious grasses such as yellow and green foxtail are combated in fields of small grains such as wheat, barley and oats by use of phenoxyalkanoylaminooxyalkanoic acids and derivatives thereof, for example, 2-phenoxypropanoylaminooxy acetic acid, formulated either as free acid or salts.

3,702,864
ALLYL OR PROPARGYL ESTERS OF SUBSTITUTED α-PHENYL PHENYLACETIC ACID

Shigeyoshi Kitamura, Toyonaka, Hajime Hirai, Minoo, Yositosi Okuno, Toyonaka, and Keimei Fujimoto, Kobe, Japan, assignors to Sumitomo Chemical Company, Ltd., Higashi-ku, Osaka, Japan

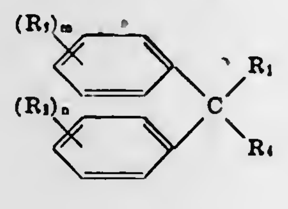
No Drawing. Filed Mar. 16, 1970, Ser. No. 20,058

Claims priority, application Japan, Mar. 29, 1969, 44/24,144; Apr. 12, 1969, 44/28,414

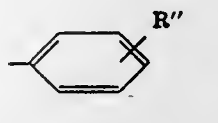
Int. Cl. C07c *69/76*

U.S. Cl. 260—473 A **9 Claims**

Diphenylmethane derivatives represented by the formula,



wherein R_1 is —OR, —COOR or —CH_2OR, in which R is propargyl or allyl; R_2 and R_3 are hydrogen, a halogen, an alkyl or methylenedioxy bonded to two carbon atoms adjacent to each other on the benzene ring; when R is propargyl R_4 is hydrogen, an alkyl, —OR′, —COOR′, —CH_2OR' or



in which R′ is propargyl, allyl or an alkyl and R″ is an alkyl or a halogen, when R is allyl R_4 is —OR‴, —COOR‴ or —CH_2OR''' in which R‴ is allyl or an alkyl; *m* and *n* are an integer of 1 to 5 and when *m* and/or *n* are an integer of 2 or more, R_2's and/or R_3's may be the same or different; the diphenylmethane derivatives being employable as synergists for insecticides.

3,702,865
ETHYL 2-METHYL-2-n-PROPYLAMINO-PROPYL SUCCINATE

Julian R. Reasenberg, Brooklyn, and Rubin Drucker, Rosedale, N.Y., assignors to Mizzy Inc., New York, N.Y.

No Drawing. Application Apr. 22, 1970, Ser. No. 28,295, which is a continuation of application Ser. No. 848,394, July 23, 1969, which in turn is a continuation of application Ser. No. 379,375, June 30, 1964. Divided and this application Jan. 27, 1971, Ser. No. 110,300

Int. Cl. C07c *69/40*

U.S. Cl. 260—485 J **1 Claim**

1-ethyl - 4 - (2 - methyl-2-n-propylamino-propyl)-succinate useful as a local anesthetic.

3,702,866
NOVEL 3,5 - BIS-ACYLAMIDO - 2,4,6-TRIIODO-BENZOIC ACIDS AND 5-ACYLAMIDO-2,4,6-TRIIODOISOPHTHALAMIC ACIDS

Sigbjorn Salvesen, Leif Gunnar Haugen, Johan Haavaldsen, and Vegard Nordal, Oslo, Norway, assignors to Nyegaard & Co. A/S, Nycoveien, Norway

No Drawing. Filed June 9, 1969, Ser. No. 831,696

Claims priority, application Great Britain, June 10, 1968, 27,497/68

Int. Cl. C07c *103/32*

U.S. Cl. 260—501.11 **6 Claims**

Novel 3,5-bis-acylamido-2,4,6-triiodobenzoic acids and 5-acylamido-2,4,6-triiodo-isophthalamic acids. The compounds of the present invention are useful as X-ray contrast agents.

3,702,867
4-AMINOMETHYLDECALINE-1-CARBOXYLIC ACID AND PREPARATION THEREOF

Shigeharu Kohno, Tatsuo Komaki, and Hideaki Watanabe, Tokyo, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

No Drawing. Filed Nov. 13, 1970, Ser. No. 89,478

Int. Cl. C07c *101/04*

U.S. Cl. 260—514 R **2 Claims**

4-aminomethyldecaline-1-carboxylic acid, a new compound, and pharmacologically acceptable salts thereof prepared by catalytical hydrogenation of 4-substituted-naphthaline-1-carboxylic acid or functional derivatives thereof and, if necessary, subjecting the hydrogenated product to hydrolysis to form the corresponding carboxylic acid. The said carboxylic acid possesses outstanding anti-plasmin effect with low toxicity. The products are suitable for prevention or therapeutical treatment of inflammatory and hemorrhagic diseases such as purpura, hemophila, nephrorrhagy and gential hemorrhage caused by plasmin.

3,702,868
PROCESS FOR THE PREPARATION OF ACETIC ACID BY CATALYTIC OXIDATION OF OLEFINES IN GASEOUS PHASE

Nicola Santangelo, Milan, Giancarlo Battiston, Baranzate, Gianfranco Pregaglia, Milan, Enrico Cavaterra, Saronno, and Mauro Croci, deceased, late of Novara, Italy, by Angelo Croci and Margherita Biagioni, heirs, Novara, Italy; said Santangelo, Battiston, Pregaglia, and Cavaterra, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed Sept. 28, 1970, Ser. No. 76,326

Claims priority, application Italy, Oct. 31, 1969, 62,046/69; Feb. 3, 1970, 20,155/70

Int. Cl. C07c *51/32*

U.S. Cl. 260—533 R **18 Claims**

A process is disclosed for the prepartion of acetic acid by the oxidation with oxygen or with an oxygen-containing gas, of one or more low molecular weight unsaturated hydrocarbons containing more than 2 carbon atoms, wherein the reaction is conducted with a quantity of unsaturated hydrocarbon between 1.5% and 10% by volume with respect to the reaction mixture; with a molar ratio oxygen/unsaturated hydrocarbon between 1:1 and 5:1; at a temperature of from 250° to 500° C.; with a contact time between 0.1 and 20 seconds; and in the presence of a catalyst consisting or consisting essentially of: molybdenum, vanadium, oxygen and, optionally, antimony, activated by heating at a temperature between 400° and 650° C. and in which the atomic ratios between the elements Mo, V and Sb correspond to the empirical formula: $Mo_a\ V_b\ Sb_c$ wherein $a+b+c=100$, a varies from 5 to 95, *b* varies from 5 to 95 and *c* varies from 0 to 90.

3,702,869
NON-HAZARDOUS KETONE PEROXIDE COMPOSITIONS

Newton G. Leveskis, Walnut Creek, and Charles B. Abma, Oakland, Calif., assignors to Argus Chemical Corp., Brooklyn, N.Y.

No Drawing. Filed Feb. 5, 1968, Ser. No. 702,783

Int. Cl. C07c *73/00*

U.S. Cl. 260—610 A **11 Claims**

Hazards from exposure to heat and reduction in effectiveness during storage of lower alkyl ketone peroxides such as methyl ethyl ketone peroxide are ameliorated through the combination of a heat desensitizing solvent having a boiling point between about 185–225° C., for example an ester such as ethyl benzoate, and a stabilizer selected from vinyl pyrrolidone and polyvinyl pyrrolidone.

3,702,870
FLUORINATED ALCOHOLATES

Allen G. Pittman, El Cerrito, and William L. Wasley, Berkeley, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Application May 21, 1969, Ser. No. 826,655, now Patent No. 3,637,791, which is a division of application Ser. No. 704,206, Dec. 28, 1967, now Patent No. 3,465,050, which is a division of application Ser. No. 623,483, Jan. 9, 1967, now Patent No. 3,419,602, which in turn is a division of application Ser. No. 398,129, Sept. 21, 1964, now Patent No. 3,384,628. Divided and this application July 9, 1971, Ser. No. 161,310

Int. Cl. C07c *35/02*

U.S. Cl. 260—617 R **2 Claims**

Fluorinated alcoholates are prepared by reacting a fluoro-ketone with an alkali metal fluoride. The alcoholates may be reacted with acyl halides to produce esters useful for enhancing the water- and oil-repellency of textiles.

3,702,871
PREPARATION OF POLYHALO PHENOLS

Edwin B. Michaels, Gregory Court 06855, and John W. Lee, Glen Ave. 06850, both of Norwalk, Conn.

No Drawing. Filed June 12, 1969, Ser. No. 832,849

Int. Cl. C07c *39/32*

U.S. Cl. 260—623 R **10 Claims**

A process is provided for the controlled hydrolysis of polyhalobenzenes and, particularly, tetrahalobenzenes to polyhalophenols in good yield and purity. This is attained by causing alkaline hydrolysis of a polyhalobenzene containing at least three halo atoms to occur under controlled conditions which involve the presence of an hydrolysis controlling reagent, a polyhydric alcohol solvent, high concentrations of resultant phenate at predetermined pH ranges and the direct recovery of said solvent. Advantageously, the process is substantially free from explosion hazards and avoids the preparation of chloracne-producing substances.

3,702,872
PRODUCTION OF HEXAFLUOROPROPANOL

Bernard M. Regan, Chicago, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

No Drawing. Continuation-in-part of application Ser. No. 787,575, Dec. 27, 1968, which is a continuation-in-part of applications Ser. No. 667,065, Sept. 12, 1967, now Patent No. 3,431,313, and Ser. No. 663,952, Aug. 29, 1967, now Patent No. 3,499,089. Application Ser. No. 667,065 is a division of application Ser. No. 538,523, Feb. 2, 1966, now Patent No. 3,362,874. This application July 27, 1970, Ser. No. 58,688

Int. Cl. C07c *31/34*

U.S. Cl. 260—633 **1 Claim**

1,1,1,3,3,3 - hexafluoropropan - 2 - ol is prepared by the vapor phase catalytic reduction of hexafluoroacetone with hydrogen employing a supported palladium on carbon catalyst.

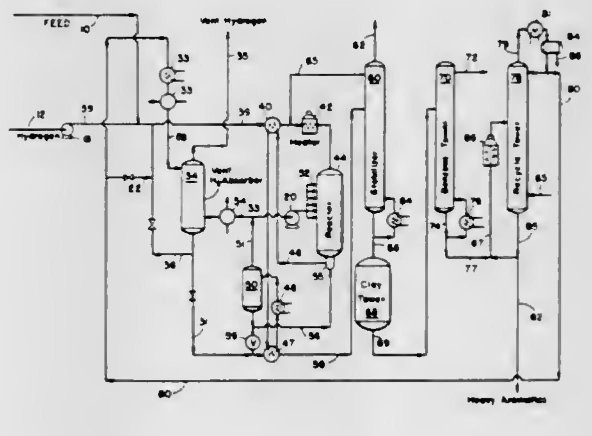
3,702,873
HYDRODEALKYLATION WITH INDEPENDENT LEAN OIL RECYCLE

Bernard I. Newberger, Brooklyn, N.Y., assignor to Hydrocarbon Research, Inc., New York, N.Y.

Filed Oct. 12, 1970, Ser. No. 79,793

Int. Cl. C07c *3/58*

U.S. Cl. 260—672 R **2 Claims**



The lean oil fed to the vent hydrogen absorber in a hydrodealkylation process is maintained independent of the output from the reactor wherein the hydrodealkylation feed is composed of the C_6 to C_9 aromatics cut and contains substantial amounts of paraffins and naphthenes boiling in the benzene-toluene range. The total recovery of benzene is maximized under such a system.

3,702,874

HYDROCARBON CONVERSION PROCESS

John H. Estes, Wappingers Falls, Stanley Kravitz, Wiccopee, and Robert M. Suggitt, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Dec. 7, 1970, Ser. No. 95,949

Int. Cl. C07c *9/00*

U.S. Cl. 208—112 **10 Claims**

Paraffin hydrocarbons containing at least seven carbon atoms are subjected to hydrocracking and isomerization under controlled temperature conditions by contacting the hydrocarbon with hydrogen, carbon monoxide and a chloride activated platinum-alumina catalyst.

3,702,875

MODIFICATION OF OXIDATIVE DEHYDROGENATION CATALYSTS

Harold E. Manning and Marvin Z. Woskow, Houston, and Harold F. Christmann, Seabrook, Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

No Drawing. Filed Mar. 2, 1970, Ser. No. 15,903

Int. Cl. C07c *5/18*

U.S. Cl. 260—680 E **14 Claims**

Oxidative dehydrogenation of organic compounds with catalyst comprising a metal ferrite with cobalt or nickel metal compound as a catalyst modifier. For example, butene is oxidatively dehydrogenated to butadiene-1,3 with a catalyst comprising manganese ferrite modified with a minor amount of cobalt oxide.

3,702,876

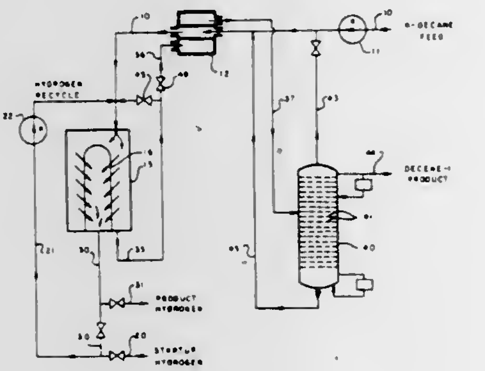
CATALYTIC CONVERSION OF ALKANES AND OLEFINS TO A PRESELECTED OLEFIN ISOMER

Bernard J. Wood, Santa Clara, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Continuation-in-part of application Ser. No. 25,498, Mar. 30, 1970. This application June 9, 1971, Ser. No. 151,311

Int. Cl. C07c *5/18, 5/22*

U.S. Cl. 260—683.2 **7 Claims**



A process for the catalytic conversion of C_4 and higher alkanes and olefins to a preselected olefin isomer of the same carbon skeletal structure, the process comprising passing a vaporous mixture of the hydrocarbon feed and hydrogen at elevated temperatures through a reaction zone over a palladium catalyst while maintaining the hydrogen content of said vaporous mixture at a relatively constant level as it passes through the reaction zone, the catalyst having been pretreated by exposure to the desired olefin at elevated temperatures in the presence of hydrogen to adsorb the olefin on the catalyst surfaces.

3,702,877

HAIR PIECES CONTAINING FIBERS OF NYLON 6, BUTADIENE-STYRENE COPOLYMER AND POLYALKYL METHACRYLATE

Joseph C. Bonafiglia, Merchantville, N.J., and Harold Krieger, Philadelphia, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Aug. 4, 1971, Ser. No. 169,048

Int. Cl. C08g *41/04*

U.S. Cl. 260—857 D **9 Claims**

Hair pieces, wigs and like products in which the predominant hair-simulating fiber is a blend of nylon-6 and a modified polyalkyl methacrylate, method of making fiber, and fiber.

3,702,878

CYCLIC ORGANOPHOSPHORUS COMPOUNDS AND PROCESS FOR MAKING SAME

Toranosuke Saito, Kobe-shi, Japan, assignor to Sanko Chemical Co., Ltd., Kurume-shi, Japan

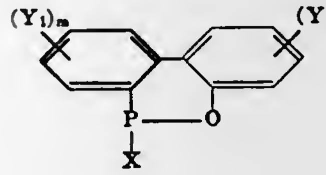
No Drawing. Filed Dec. 31, 1969, Ser. No. 889,689

Int. Cl. C07d *105/04;* **A01n** *9/36;* **B01j** *1/16*

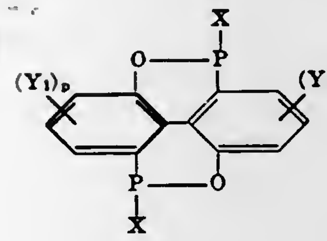
U.S. Cl. 260—936 **11 Claims**

New organophosphorus compounds of the general formulas

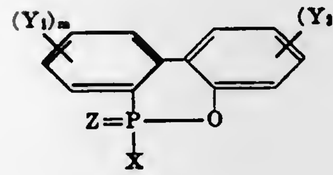
(I)



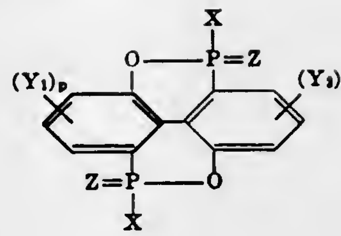
(II)



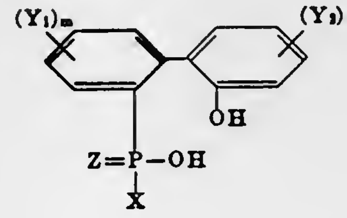
(III)



(IV)

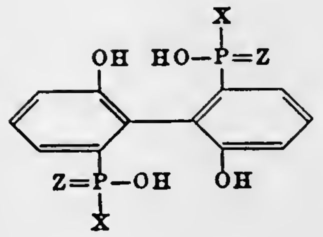


(V)



and

(VI)



wherein X is hydrogen or halogen or hydroxyl amino, alkyl alkoxy, alkylthio, aryloxy or arylthio radicals; Y_1 and Y_2 which may or may not be the same are halogen or alkyl, aryl, alkoxy, aryloxy acyl, nitro, cyano, or sulfonic acid radicals, including the case where the substituted radicals Y_1 and Y_2 combine with a biphenyl ring to form a phenanthrene ring; Z is oxygen, sulfur or two halogen atoms; *m* and *n* are an integer ranging from 0 to 4; and *p* and *q* are an integer ranging from 0 to 3 are obtained by condensation of phosphorus compounds and orthophenylphenol derivatives in the presence of a catalyst, with the subjection, if desired, of the product to a known chemical procedure. The compounds thus obtained are useful as insecticides, fungicides, antioxidants for high-molecular compounds, etc.

3,702,879

BIS-(p - HYDROXYPHENYL) ALKYL-PHOSPHONIC ACID ESTERS, PROCESS FOR PREPARING THE SAME

Hellmut F. I. Bredereck, 140 Zeppelin St., 7000 Stuttgart, Germany; Miltiadis I. Iliopulos, 1503 28th St., Vienna, W. Va. 26101; and Horst F. Wieder, 2300 Amy Ave., Kingsport, Tenn. 37664

No Drawing. Continuation-in-part of application Ser. No. 471,465, July 12, 1965. This application Jan. 14, 1970, Ser. No. 2,938

Int. Cl. C07f *9/40;* **C08g** *17/13;* **A01n** *9/36*

U.S. Cl. 260—953 **9 Claims**

Bis-(p-hydroxyphenyl) alkyl phosphonic acid esters are prepared by reacting a phenol (or a mono- or di-substituted phenol) with an α-ketophosphonic acid diester in the presence of a Lewis acid. The Lewis acid may also be complexed with either or both of the reactants prior to or during the reaction. The phosphonic acid diesters produced are novel compounds and are useful intermediates in the production of novel derivatives and polymers.

3,702,880

METHOD OF USING A ZINC CHLORIDE AQUEOUS SOLUTION THROUGH CIRCULATION AND OF PURIFYING THEREOF

Fukusaburo Matsushita, Yasuo Saji, Kazuhisa Saito, Kozo Tanaka, and Osamu Yoshinari, Shizuoka, Japan, assignors to Toho Beslon Co., Ltd., Tokyo, Japan

No Drawing. Filed Apr. 8, 1970, Ser. No. 26,776

Claims priority, application Japan, Apr. 8, 1969, 44/27,045

Int. Cl. D01f *7/08*

U.S. Cl. 264—38 **5 Claims**

Improvement in solution polymerization process for the production of acrylic fibers, which polymerization is carried out in the presence of a reaction medium comprising concentrated aqueous zinc chloride solution, which solution is recycled to the polymerization after the spinning operation, comprising purification of the solution by selectively controlled oxidation processes to maintain the proportions of organic impurities below specifically defined levels prior to such recycling.

3,702,881

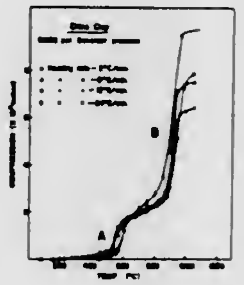
REACTIVE HOT PRESSING AN OXIDE THROUGH ITS POLYMORPHIC PHASE CHANGE

Asoke Chandra Das Chaklader, Vancouver, British Columbia, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Continuation of application Ser. No. 713,922, Mar. 18, 1968, which is a continuation-in-part of application Ser. No. 418,282, Dec. 14, 1964. This application June 8, 1970, Ser. No. 48,804

Int. Cl. C04b *35/64;* **B22f** *3/12, 3/16*

U.S. Cl. 264—66 **11 Claims**



A process for producing dense hard oxide and oxide-containing products from materials consisting of or containing an oxide capable of undergoing a polymorphic phase transformation when heated to a temperature of generally between 200° C. and 1200° C., which process includes heating the material to said transformation temperature and at least while the transformation is occurring, applying pressure to the material.

3,702,882

PROCESS FOR THE PREPARATION OF FINE SIZED MAGNESIUM ALUMINATE SPINEL

Richard R. Rettew, Laurel, Md., David G. Wirth, Jr., Golden, Colo., and Rimantas Glemza, Baltimore, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 784,168, Nov. 16, 1968. This application Apr. 15, 1971, Ser. No. 134,435

Int. Cl. C01f *7/02*

U.S. Cl. 423—600 **3 Claims**

A process for preparing magnesium aluminate

$(MgAl_2O_4)$

powder which comprises thermally decomposing salts, solutions, or slurries in a high temperature fluid energy mill. The product, after suitable calcination, can be cold pressed and sintered to 97–99% of theoretical density at temperatures of 100–250° C. lower than is required by conventional processes.

3,702,883

ZIRCONIUM TETRAFLUORIDE PROCESS

William J. S. Craigen, Gordon M. Ritcey, and Edwin Glendon Joe, Ottawa, Ontario, and Frank William Melvanin and Bruce C. Smart, Port Hope, Ontario, Canada, assignors to Eldorado Nuclear Limited, Ottawa, Ontario, Canada

Filed Aug. 20, 1970, Ser. No. 65,430

Claims priority, application Canada, Aug. 25, 1969, 60,368

Int. Cl. C22b *59/00*

U.S. Cl. 423—82 **16 Claims**

Anhydrous zirconium tetrafluoride is prepared by precipitating the monohydrate from a clear solution of zirconyl nitrate in at least 8 N nitric acid, by the addition of hydrofluoric acid and the acid solution remaining after the precipitation is used for the preparation of further zirconyl nitrate solution. In contrast to previously known processes for the preparation of zirconium tetrafluoride, the present process gives a product which is readily dehydrated and, with suitable feed, sufficiently pure to be directly converted into nuclear grade zirconium metal. The process is applicable to continuous industrial scale use.

3,702,884

METHOD FOR REDUCING SULFUR COMPOUNDS IN SULFUR PLANT EFFLUENT

Elton B. Hunt, Jr., and Karol L. Hujsak, Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.

Filed May 22, 1970, Ser. No. 39,844

Int. Cl. C01b *17/04*

U.S. Cl. 423—222 **3 Claims**

In the recovery of sulfur from hydrogen sulfide-containing gases wherein the first of a series of reactors is operated under conventional Claus conditions, one or more of the remaining catalytic reactors in the sulfur plant are operated at temperatures of the order of from about 250° to about 400° F. whereby free sulfur is deposited on the catalyst, regeneration of such catalyst is effected by heating a portion of the first reactor-condenser effluent to 500°–700° F. and flowing the resultant hot gas through the deactivated catalyst bed to vaporize free sulfur therefrom and regenerate the catalyst. Before placing the freshly regenerated catalyst bed back on stream, it is cooled with unheated first reactor-condenser effluent to a temperature of from about 250° to about 400° F. Thereafter the above cycle is repeated.

3,702,885

PHOSPHORIC ACID PROCESS

Joseph W. Markey, Rumson, N.J., assignor to Cities Service Company, New York, N.Y.

Continuation-in-part of applications Ser. No. 748,966, Ser. No. 748,967, Ser. No. 748,996, Ser. No. 749,175, Ser. No. 749,176, Ser. No. 749,194, and Ser. No. 749,218, all July 31, 1968, all now abandoned. This application July 13, 1970, Ser. No. 54,330

Int. Cl. C01b *25/18*

U.S. Cl. 423—319 **29 Claims**

A mixture of nitric and phosphoric acids can be separated by contact with nitric oxide, the nitric acid and nitric oxide reacting to form nitrogen dioxide gas and water. The nitric oxide can be obtained by decomposing calcium nitrate which, in turn, can be obtained by precipitation from the acidulation solution formed by digesting phosphate rock with nitric acid. The foregoing can be combined in a process wherein phosphate rock is treated with nitric acid to form an acidulate solution, calcium nitrate is precipitated therefrom and decomposed; the nitric oxide in the decomposition gases being recycled to reduce the nitric acid concentration of the acidulate, the nitrogen dioxide in the decomposition gases being recycled to form additional nitric acid.

3,702,886

CRYSTALLINE ZEOLITE ZSM-5 AND METHOD OF PREPARING THE SAME

Robert J. Argauer, Kensington, Md., and George R. Landolt, Audubon, N.J., assignors to Mobil Oil Corporation

No Drawing. Continuation-in-part of abandoned application Ser. No. 630,993, Apr. 14, 1967. This application Oct. 10, 1969, Ser. No. 865,472

Int. Cl. C01b *33/28*

U.S. Cl. 423—328 **19 Claims**

A family of crystalline zeolites, designated ZSM–5, having the composition, expressed as mole ratios of oxides as follows:

$$0.9\pm0.2M_{2/n}O:W_2O_3:5\text{–}100YO_2:zH_2O$$

wherein M is at least one cation, *n* is the valence thereof, W is selected from the group consisting of aluminum and gallium, Y is selected from the group consisting of silicon and germanium, and *z* is from 0–40, and characterized by a specified X-ray powder diffraction pattern. Catalytic conversion carried out in the presence of such zeolites.

3,702,887

PROCESS FOR THE MANUFACTURE OF HYDROGEN CYANIDE FROM FORMAMIDE

Kurt Sennewald, Hermulheim, near Cologne, Rudolf Wesselmann and Ernst Holler, Knapsack, near Cologne, and Heinz Muller, Bruhl, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

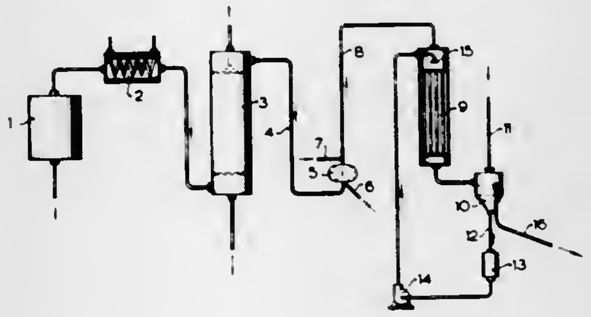
Filed Dec. 4, 1970, Ser. No. 95,211

Claims priority, application Germany, Dec. 8, 1969, P 19 61 484.7

Int. Cl. C01c *3/02;* **F25j** *3/00*

U.S. Cl. 423—373 **3 Claims**

Improved production of aqueous hydrocyanic acid by subjecting formamide to a cleavage reaction under reduced pressure and at elevated temperatures, wherein the hydrocyanic acid-containing cleavage gas, which is freed from ammonia and cooled, is compressed substantially to atmospheric pressure and liquefied. The compressed cleavage gas is more particularly liquefied in one or more condensers, which are arranged in upright position and series-connected together; the resulting aqueous hydrocyanic acid is collected in one or more condensers; a portion of hydrocyanic acid is continuously removed therefrom, recycled to the head of the condenser(s) and sprayed thereinto.



3,702,888

MICACEOUS TELLURITES AND THE METHOD OF MAKING THEM

Michael J. Redman, Belmont, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.

No Drawing. Filed Nov. 5, 1970, Ser. No. 87,337

Int. Cl. C01f *11/00;* **C01b** *19/00*

U.S. Cl. 423—508 **10 Claims**

Tellurites with the composition MTe_2O_5 where M is selected from cadmium, strontium, or calcium in the form of mica-like plates are provided.

3,702,889

PROCESS FOR MAKING ACTIVATED MANGANESE DIOXIDE

Irving M. Goldman, Niantic, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 733,784, June 3, 1968. This application Oct. 19, 1970, Ser. No. 82,142

Int. Cl. C01g *45/02;* **B01j** *11/32*

U.S. Cl. 423—605 **9 Claims**

Wet precipitated manganese dioxide is activated by removal of water by extraction or azeotropic distillation with inert water entrainers.

3,702,890

METHODS OF COMBATTING INSECTS, FUNGI OR NEMATODES USING PHOSPHONO THIOESTER AMIDATES

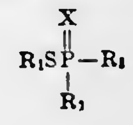
Paul C. Aichenegg, Prairie Village, Kans., assignor to Chemagro Corporation, Kansas City, Mo.

No Drawing. Application Dec. 31, 1969, Ser. No. 889,088, which is a continuation-in-part of application Ser. No. 620,664, Mar. 6, 1967, now Patent No. 3,489,825, dated Jan. 13, 1970. Divided and this application Nov. 5, 1971, Ser. No. 196,183

Int. Cl. A01n *9/36*

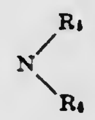
U.S. Cl. 424—220 **9 Claims**

Compounds are prepared having the formula



$$R_1S\overset{\overset{X}{\|}}{\underset{\underset{R_3}{|}}{P}}-R_2$$

where R_1 is trichloroethyl or dichlorovinyl, R_2 is lower alkyl or phenyl, R_3 is OR_4 or SR_4 or



$$-N\begin{matrix}R_5\\R_6\end{matrix}$$

where R_4 is alkyl, aryl, haloalkyl or haloaryl, R_5 and X is O or S. Preferably R_4 and R_5 are lower alkyl and R_6 is H or lower alkyl. The compounds are useful as nematocides, fungicides, and insecticides. Preferably R_1 is 2,2,2-trichloroethyl or 2,2-dichlorovinyl.

3,702,891

INSECTICIDAL COMPOSITION COMPRISING A SYNERGISTIC MIXTURE OF 5 - BENZYL - 3-FURYLMETHYL d - TRANS-CHRYSANTHEMATE AND N-(3,4,5,6 - TETRAHYDROPHTHALIMIDO)-METHYL d-TRANS-CHRYSANTHEMATE

Keizo Hamuro, Nishinomiya, Japan, assignor to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Nov. 17, 1970, Ser. No. 90,412

Claims priority, application Japan, Nov. 19, 1969, 44/93,287

Int. Cl. A01n *9/22, 9/28*

U.S. Cl. 424—274 **1 Claim**

An insecticidal composition having low toxicity and rapid effect which comprises, as an active ingredient, a mixture of 5-benzyl-3-furylmethyl d-trans-chrysanthemate and N - (3,4,5,6 - tetrahydrophthalimide)-methyl d-trans-chrysanthemate.

3,702,892

HALOBENZOYLPROPIONIC ACID ESTERS AS INSECT REPELLANTS

Gerhard Bachmann and Heinrich Adolphi, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed May 4, 1970, Ser. No. 34,623

Claims priority, application Germany, May 10, 1969, P 19 23 916.8

Int. Cl. A01n *9/24*

U.S. Cl. 424—308 **5 Claims**

New and valuable halobenzoylpropionic acid esters which have a strong repellent action on insects, and a process for repelling insects with these active ingredients.

3,702,893

METHOD OF REPELLING RODENTS USING 2,2' - METHYLENEBIS (4,6-DI-TERT.-BUTYLRESORCINOL)

Charles H. Fuchsman, Cleveland Heights, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

No Drawing. Original application Nov. 24, 1969, Ser. No. 879,559, now Patent No. 3,644,649, dated Feb. 22, 1972. Divided and this application June 1, 1971, Ser. No. 148,977

Int. Cl. A01n *9/00, 9/26*

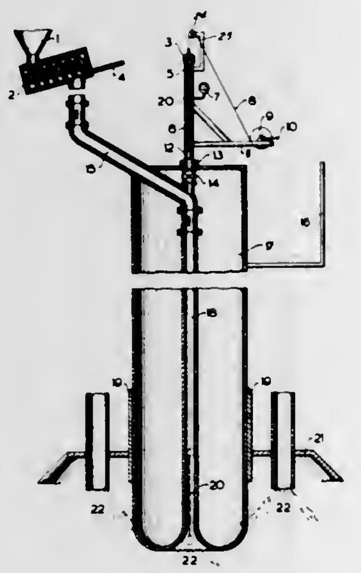
U.S. Cl. 424—346 **1 Claim**

Rodent repellents 2,2'-methylenebis(4,4-di-tert.-butylresorcinol) and 2,2'-thiobis(4,6-di-tert.-butylresorcinol) are taught.

ELECTRICAL

3,702,894
PROCESS AND INSTRUMENT FOR MEASURING THE LENGTH OF A HOLLOW ELECTRODE IN AN ELECTROTHERMAL MELTING FURNACE

Heinz Kirchem, Bruhl-Vochem, and Wilhelm Portz, Erfstadt Kierdorf, both of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack bei Koln, Germany
Filed Dec. 20, 1971, Ser. No. 209,908
Claims priority, application Germany, Dec. 23, 1970, P 20 63 449.5
Int. Cl. H05b *7/08*
U.S. Cl. 13—1 **11 Claims**

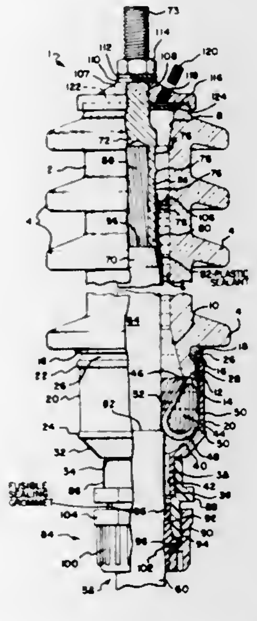


The length of a hollow electrode in an electrothermal melting furnace is determine. To this end, dusty burden is introduced into the furnace by conveying the burden with the use of an auxiliary gas through a passageway left in the hollow electrode and, while supplying the dusty burden, the formation of a cushion of dusty burden around the lower end of said passageway in the hollow electrode is effected. A steel cable having a measuring rod secured to it is unrolled and advanced at short intervals through the said passageway in the hollow electrode so as to produce contact between the said measuring rod and the said cushion of dusty burden. The length of the hollow electrode is measured by determining the length of the unrolled steel cable and the steel cable is retracted.

3,702,895
CABLE TERMINATOR WITH DIELECTRIC

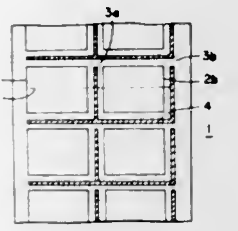
Frederick Carl de Sio, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed March 10, 1971, Ser. No. 122,951
Int. Cl. H02g *15/22, 15/04*
U.S. Cl. 174—19 **2 Claims**

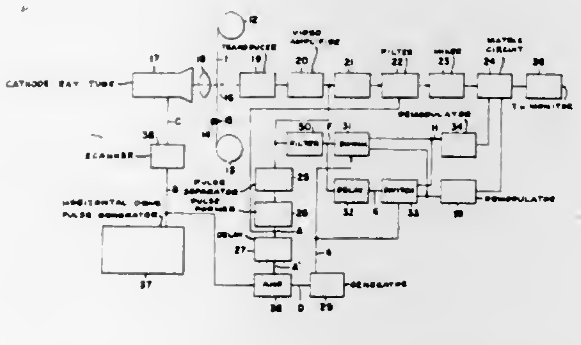
A cable terminator wherein an insulation housing is received in a conducting shield. A multiple loop spring provides a plurality of electrical conducting paths in contact with and extending between the shield and the semi-conductive jacket of a high voltage cable. The housing may be partially filled with a flowable dielectric sealably retained within the housing by a dielectric absorbing seal.



3,702,896
VIDEO INFORMATION RECORDING MEDIA AND APPARATUS FOR REPRODUCING VIDEO INFORMATION

Koichiro Kurahashi; Masanori Nakada, both of Hyogo; Masaaki Abe, Kyoto, and Koichi Nishimura, Kamakura, all of Japan, assignors to Mitsubishi Electric Corporation, Tokyo, Japan
Filed Oct. 20, 1970, Ser. No. 82,375
Claims priority, application Japan, Oct. 31, 1969, 44/87393
Int. Cl. H04n *5/86*
U.S. Cl. 178—5.2 R **2 Claims**

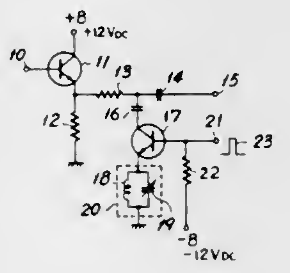




A video information recording media and apparatus for reproducing video information recorded on the media is provided. A luminance signal Y and a color signal (R-Y) is recorded on one side of the recording media and a luminance signal Y and a color signal (B-Y) is recorded on an adjacent side of the recording media. The color video information upon the recording media is reproduced by the use of a flying spot scanner which horizontally scans the recording media and alternately reads the Y and (R-Y) signal and the Y and (B-Y) signal and by the use of a delay is able to compose the desired information therefrom.

3,702,897
HUE CONTROL CIRCUIT FOR COLOR VIDEO SIGNAL

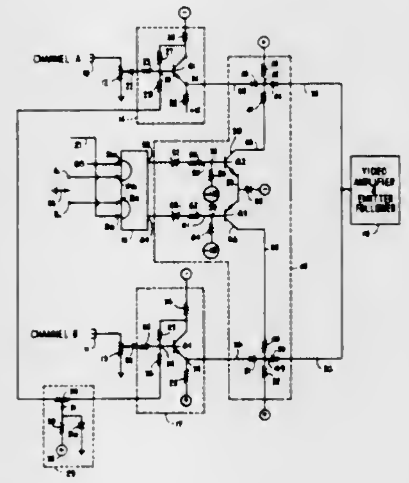
Tsuneyoshi Hidaka, Tokyo, and Yoshihiko Honjo, Yokohama-City, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Kanagawa-ken, Japan
Filed June 30, 1970, Ser. No. 51,104
Claims priority, application Japan, July 4, 1969, 44/53175; July 4, 1969, 44/53176
Int. Cl. H04n *9/46*
U.S. Cl. 178—5.4 HE **3 Claims**



A hue control circuit has a phase shifting circuit which may be connected to a transmission line for a NTSC system color video signal. The phase shifting circuit is connected to the transmission channel only during every color burst signal period. The phase of the color burst signal of the color video signal is controlled by the phase shifting circuit so that the hue of the color video signal is controlled.

3,702,898
ELECTRONIC VIDEO EDITOR

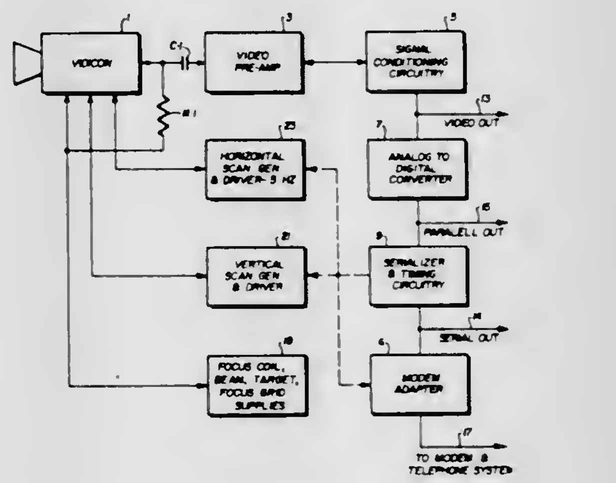
Darrow L. Webb, Cocoa, Fla., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Aug. 4, 1970, Ser. No. 60,883
Int. Cl. H04n *5/22;* **H03k** *17/74*
U.S. Cl. 178—6 **1 Claim**



An electronic video editor for switching any one of a plurality of video input signals to a common output channel. The switching operation is manually initiated and electronically controlled so that the switching from one video input signal to another takes place during the blanking portion of the signal in order that frames of the picture are not lost.

3,702,899
DIGITAL VIDEO TRANSMITTER

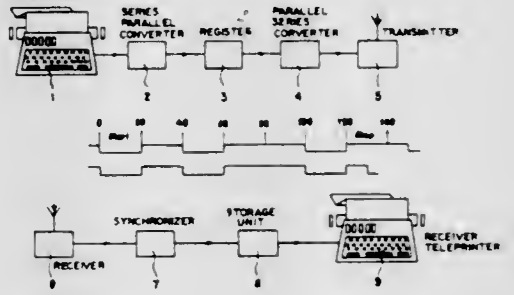
Peter C. Schmitt, Madison Heights; Carl W. Vette, Clawson, and Amos J. Meyer, II, Ferndale, all of Mich., assignors to Center For Scientific Studies, Inc., Southfield, Mich.
Filed Jan. 13, 1971, Ser. No. 106,010
Int. Cl. H04n *7/12*
U.S. Cl. 178—7.2 **1 Claim**


VIDICON
VIDEO PRE-AMP
SIGNAL CONDITIONING CIRCUITRY
VIDEO OUT
HORIZONTAL SCAN GEN & DRIVER-5 HZ
ANALOG TO DIGITAL CONVERTER
PARALELL OUT
VERTICAL SCAN GEN & DRIVER
SERIALIZER & TIMING CIRCUITRY
SERIAL OUT
FOCUS COIL, BEAM, TARGET, FOCUS GRID SUPPLIES
MODEM ADAPTER
TO MODEM & TELEPHONE SYSTEM

A system for transmitting visual image information over telephone lines is disclosed. The system comprises a vidicon, video preamplifier, signal conditioning circuitry, an analog to digital converter and timing circuitry. The vidicon scanning rate is slow enough to permit transmission of the digitized signal in real-time without intermediate buffering via a conventional telephone system.

3,702,900
SYNCHRONIZING DEVICES

Oskar Sturzinger, Baar, Zug, Switzerland, assignor to Anstalt Europaische Handelsgesellschaft, Vaduz, Liechtenstein
Filed Aug. 24, 1970, Ser. No. 66,341
Claims priority, application Switzerland, Aug. 29, 1969, 13161/69
Int. Cl. H04l *7/04*
U.S. Cl. 178—53.1 **3 Claims**



This invention relates to synchronizing devices for telegraphy systems for processing binary coded signals having a start and stop signal element. According to the invention, a storage unit is provided at the transmitter for temporarily storing signal groups and this is connected to a signal transmitter to produce signal groups coded to the information to be transferred or transmitted; the signal transmitter is connected to a transmitter distributor that interrogates the storage unit at constant frequency and the transmitter distributor also has an empty storage unit to produce a filler signal group containing no information and used for shortening the stop step of each signal group; at the receiver means are provided that respond at the constant time frequency to control the operational frequency of the receiver.

3,702,901

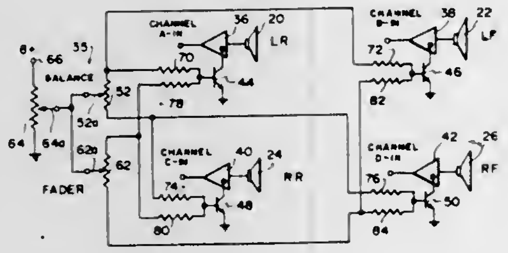
VOLUME, BALANCE AND FADER CONTROL FOR FOUR CHANNEL SOUND SYSTEM

James R. Cherry, Barrington, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 22, 1970, Ser. No. 100,579

Int. Cl. H03g *3/00*

U.S. Cl. 179—1 G **4 Claims**



A volume, balance and fader control circuit is provided to control the translation of audio signals through a four channel audio system so that balancing of the output volume of the four channels is readily accomplished by a simple balance and fader control arrangement without causing changes in the total volume output of the four speakers. A single potentiometer is used for the left to right balance control and a second single potentiometer is used for the front to back fader control. The balance and fader potentiometers are operated to place the listener in the center of a surrounding field of sound without changing the total volume level of the four speakers.

3,702,902

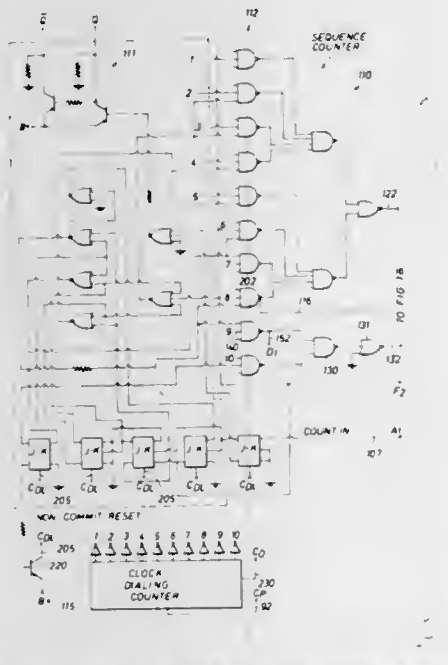
TELEPHONE DIALING EQUIPMENT

John R. Willis, Houston, Tex., assignor to Electromitor, Inc.

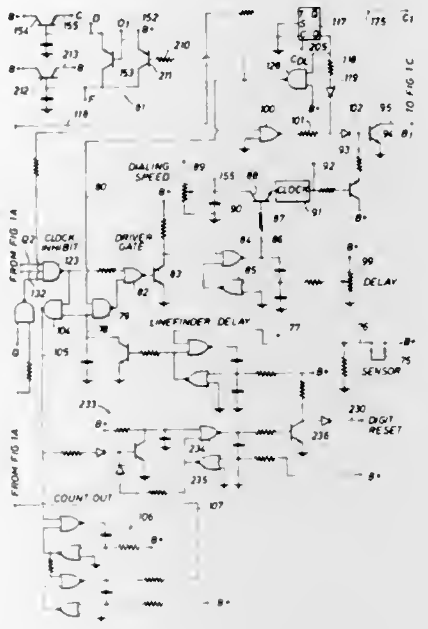
Filed July 21, 1970, Ser. No. 56,883

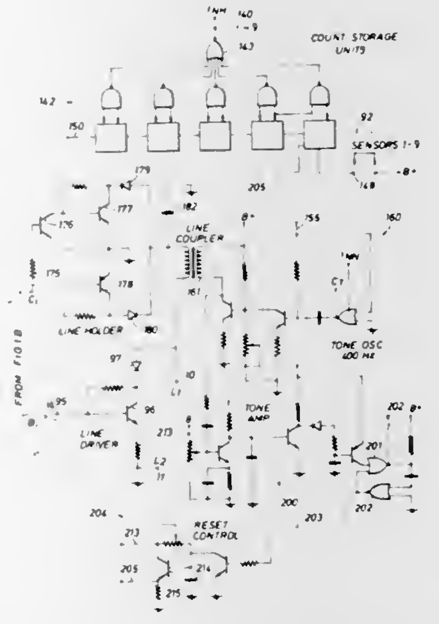
Int. Cl. H04m *11/04*

U.S. Cl. 179—5 R **9 Claims**



For use with a conventional telephone system, automatic dialing equipment which includes a master or central station and a remote, automatically triggered, dialing station. The remote station is triggered by an alarm device of no particular interest to the present invention such as one to indicate an intruder or a fire. The remote station, once triggered, electronically dials by forming the necessary make and break signals for the conventional telephone equipment found at the telephone exchange and the message is transferred through the exchange to the master station. The master station is adapted to respond to calls from several remote stations. The master station interrogates the remote station through coded tone pulses and receives a response indicating the identity of the remote station, the nature of the alarm, and other pertinent information which enables it to respond to the inquiry from the remote station and from a signal or output dictated by the nature of the interrogation.





3,702,903

TELEPHONE SECURITY DEVICE

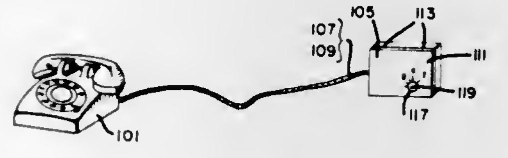
Filex Phillip Barton, Winnipeg, Manitoba, Canada, assignor to Commercial Communications Ltd., Winnipeg, Manitoba, Canada

Filed June 16, 1970, Ser. No. 46,624

Claims priority, application Canada, June 17, 1969, 054,540

Int. Cl. H04m *3/38*

U.S. Cl. 179—18 DA **7 Claims**



In order to prevent the unauthorized use of dial-type telephone to make long distance calls, the security device of

the present invention is connected to the wall-box at which the telephone cord is connected to the telephone Company's wiring. In position, it permits the effective dialing of up to say eight digits, and then prevents the effective dialing of any further digits until the telephone handset has been replaced and removed. The number of digits permitted will depend upon the type of installation, eight digits being used in a PABX: in a PABX a long distance direct dialed call requires the dialing of 9-1-and seven digits, i.e., 9 digits in all, and any attempted call is aborted in the absence of the last digit. A pulse-group counter stops the transmission of enough pulse-groups to make direct-distance dialed call.

3,702,904

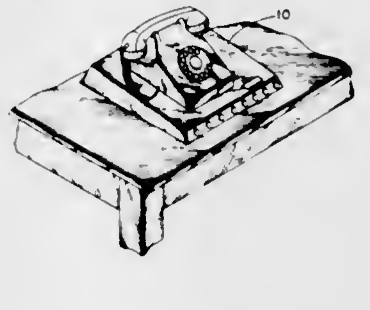
SIGNAL COUNTER

Jackson F. Bard, 8655 Belford Ave., Apt. 49, Los Angeles, Calif.

Filed Nov. 5, 1970, Ser. No. 87,104

Int. Cl. H04m *1/26*

U.S. Cl. 179—2 A **14 Claims**



A system for recognizing coded signals, such as telephone ring signals, which have a uniform duration and interval between successive signals which includes an apparatus for providing a signal corresponding to each ring or sub-signal together with one or more control signals whose start times and durations are related to the duration and spacing of the ring signals or sub-signals. The ring signals and the control signals are made to operate logic circuitry which actuates switches when the ring signals conform to a prearranged code. The switches operate display units or perform control functions. The logic system between the signal generation portion of the apparatus and the control switches can have a number of degrees of complexity and the embodiment selected for detailed description includes three logic systems which are operated simultaneously and which incorporate different degrees of complexity. All three systems include a counter and decoders to activate switches in accordance with the number of counts that are made. They also include a control circuitry which initiates counting and prevents counting in accordance with a predefined plan so that the system response to a more complex code of ring signals.

3,702,905

MULTI-STATION SHARED AUTOMATIC DIALING APPARATUS

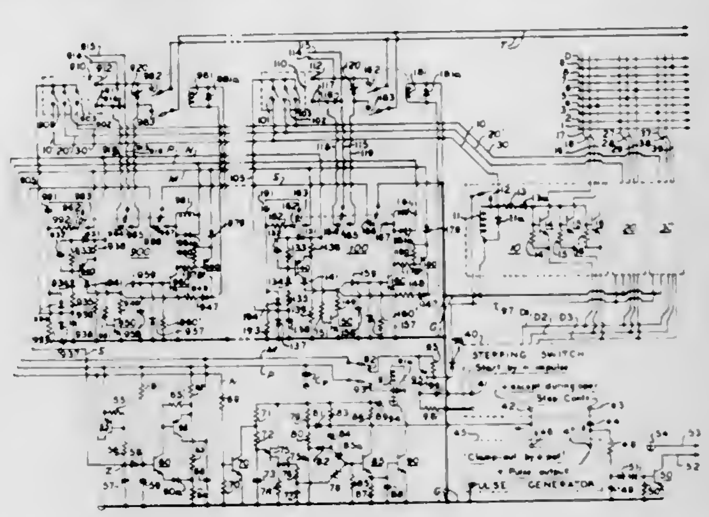
Ramon Gil, Montville Twp., Morris City, N.J., assignor to G-V Controls Inc., Livingston Township, Essex County, N.J.

Continuation of Ser. No. 746,104, July 19, 1968. This application Nov. 19, 1970, Ser. No. 91,206

Int. Cl. H04m *1/45*

U.S. Cl. 179—90 BD **9 Claims**

The use of an automatic dial-signal generating means is shared by a plurality of stations each having its own telephone line. Each station has a plurality of selective controls each operable to select a respective one of a number of programming devices common to all the stations, and means which mark that station in response to a selection-control operation thereat. Appropriate means preclude a more-than-transient coexistent marking of any plurality of the stations, and there is associated with each station a respective means responsive to a selection-control operation at that station for supplying activating current therefrom to the selected programming device only after that station has remained marked for a brief but more-than-transient period.



3,702,906

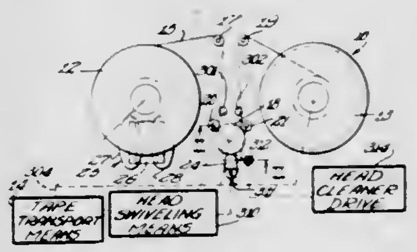
APPARATUS AND METHOD FOR CONDITIONING MAGNETIC TRANSDUCER SYSTEM WITH BOTH HEAD CLEANER AND BULK DEMAGNETIZER

Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.

Continuation-in-part of Ser. No. 813,359, Feb. 7, 1969, Pat. No. 3,595,584, which is a division of Ser. No. 456,192, May 17, 1965, Pat. No. 3,449,528. This application June 8, 1970, Ser. No. 44,510

Int. Cl. G11b *3/58, 5/46, 5/54*

U.S. Cl. 179—100.2 D **11 Claims**



A magnetic tape transducing machine with integral head cleaning brush, head demagnetizer and bulk tape demagnetizer, for selective conditioning of the head and tape alternately with actual transducing operations. The brush preferably rotates on an axis oblique to the direction of tape travel across the head while being relatively translated in said direction during contact with the head.

3,702,907

DEVICE FOR AUTOMATICALLY PREVENTING THE ERASING OF A TAPE IN A TAPE CASSETTE

Masaaki Sato, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

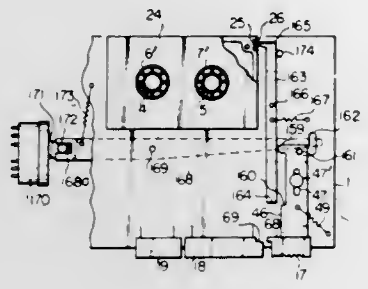
Filed May 28, 1970, Ser. No. 41,352

Claims priority, application Japan, May 30, 1969, 44/49658

Int. Cl. G11b *15/04, 23/04*

U.S. Cl. 179—100.2 Z **21 Claims**

Device for automatically preventing the erasing of information recorded on a tape in a tape cassette having an encoding recess in which a fin is selectively provided for indicating that the information on the tape may not be erased when no fin is provided in the recess, the existence or the lack of the fin being sensed by the detecting nose of a detecting mechanism provided in a tape recorder to be used with the tape cassette so as to control the tape recorder. The detecting nose is normally held out of the encoding recess when the cassette is loaded on the tape recorder but, when a recording knob for moving an erasing head to its operative position is actuated, the detecting nose is actuated for sensing encoding recess so



that proper operation of the tape recorder is insured while the cassette is loaded and released without any obstruction by the detecting nose.

3,702,908

AUTOMATIC TAPE DRIVING SYSTEM FOR TAPE RECORDERS USING A LOW FREQUENCY SIGNAL WITH A NON-SIGNAL FOR REVERSING

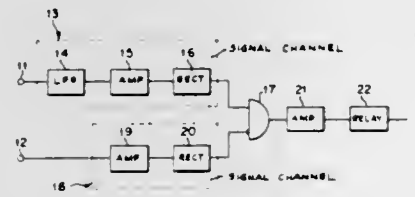
Naokatsu Sugiura, Tokyo, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan

Filed Aug. 25, 1970, Ser. No. 66,762

Claims priority, application Japan, Aug. 27, 1969, 44/67177

Int. Cl. G11b *15/06, 23/18, 27/22*

U.S. Cl. 179—100.2 S **5 Claims**



In an automatic tape driving system for a tape recorder utilizing a magnetic tape having first and second sound tracks which are used at the same time, a portion of the first sound track is recorded with a reverse signal of an inaudible low frequency, and a portion of the second sound track corresponding to the above described portion of the first sound track is not recorded with any signal. A logic circuit is connected to first and second signal channels associated with the first and second tracks to produce an output signal only when the first signal channel supplies thereto a signal corresponding to the reverse signal, and the second signal channel indicates the absence of a signal, to energize control means which reverses or stops the running of the magnetic tape.

3,702,909

FLUID-CONTROLLED SELECTION SYSTEM

Hillebrand Johannes Josephus Kraakman, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

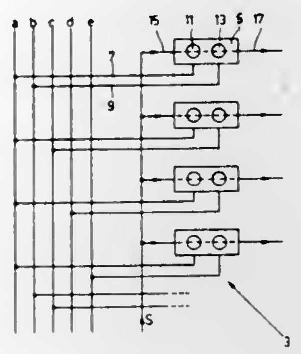
Filed April 22, 1971, Ser. No. 136,462

Claims priority, application Netherlands, April 25, 1970, 7006059

Int. Cl. H01h *35/24, 35/34*

U.S. Cl. 200—83 R **11 Claims**

A fluid-controlled selection system having a number of logical fluid elements, each of which has a pressure output communicating with a pressure input. In the communication between a pressure input and a pressure output at least two series-arranged fluid interrupters are incorporated. The said fluid interrupters in each logical fluid element are controlled by means of control signals originating from a combination of two control pressure lines from a total number of control pressure lines for the entire selection system, this combination being different for each fluid element.



3,702,910

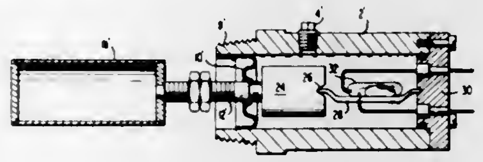
MAGNETIC FLOAT POINT SENSOR FOR HIGH PRESSURE CONTAINERS

Lloyd T. Akeley, Fullerton, Calif., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.

Continuation of Ser. No. 815,146, April 10, 1969, abandoned. This application March 24, 1971, Ser. No. 127,810

Int. Cl. H01h *35/18*

U.S. Cl. 200—84 R **6 Claims**



A float switch for operating a magnetic switch utilizing an oil-filled chamber in which there is supported for limited movement a magnetic member for energizing for a given position of the magnet a reed switch assembly mounted on the exterior of the chamber. A float member exterior of the housing and connected to the magnet by means of a bellows seal arrangement positions the magnet within the interior of the housing in accordance with the change of liquid level acting upon the float.

3,702,911

VACUUM CIRCUIT BREAKER

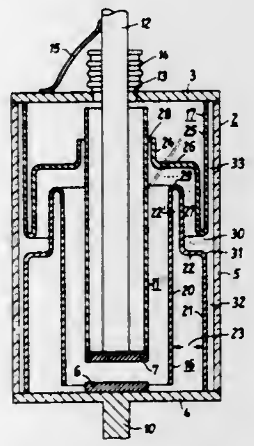
Max-Josef Schonhuber, Schliersee/Oberbay, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed July 12, 1971, Ser. No. 161,772

Claims priority, application Germany, July 16, 1970, P 20 36 099.0

Int. Cl. H01h *33/66*

U.S. Cl. 200—144 B **13 Claims**



A vacuum circuit breaker has contacts and a cylindrically shaped electrode system. A switching arc passes from the contacts to the electrode system. The electrode system comprises an inner cylindrical electrode affixed to one of the contacts and an outer cylindrical electrode concentric with the inner electrode and having a double wall. Voltage is applied to the outer sleeve of the outer electrode. An additional electrode at the potential of the inner electrode is axially adjacent and faces the outer electrode forming a substantially annular canal between the additional and outer electrodes which extends radially at least in part.

3,702,912

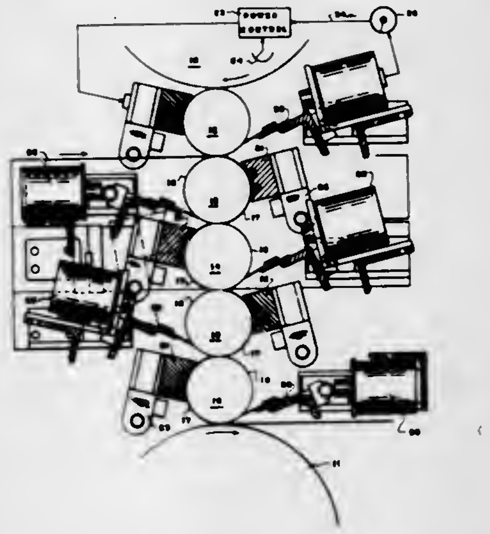
METHOD OF AND APPARATUS FOR CALENDERING STRIP-LIKE MATERIAL

Joseph Irwin Greenberger, Pittsburgh, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Feb. 4, 1971, Ser. No. 112,648

Int. Cl. H05b *5/00*

U.S. Cl. 219—10.61 **11 Claims**



The disclosure of this invention relates to a method and apparatus for processing strip-like material, such as paper and synthetics. It includes a multi-roll calender in which the material is passed around the rolls in a serpentine manner so that the rolls have material-contacting portions and non-material-contacting portions. External induction heating is applied to the material-contacting portions of the rolls to heat the rolls immediately under the material. The temperature of the rolls are measured by sensors at the noncontacting portions of the rolls.

3,702,913

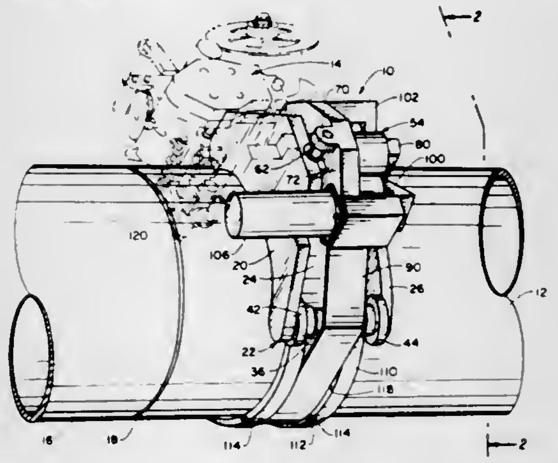
WELDING HEAD SUPPORTING APPARATUS

Gasparas Kazluaskas, North Hollywood, and Mindaugas E. Gedgaudas, Valencia, both of Calif., assignors to Astro-Arc Company, Sun Valley, Calif.

Filed April 21, 1971, Ser. No. 136,112

Int. Cl. B23k *9/12*

U.S. Cl. 219—60 A **9 Claims**



An apparatus to support a welding apparatus which is to effect welding of cylindrical tubes wherein the welding apparatus is moved around the tubes by means of a roller being driven about a flexible band, the flexible band being held taut between a guide roller housing and a drive roller housing.

3,702,914

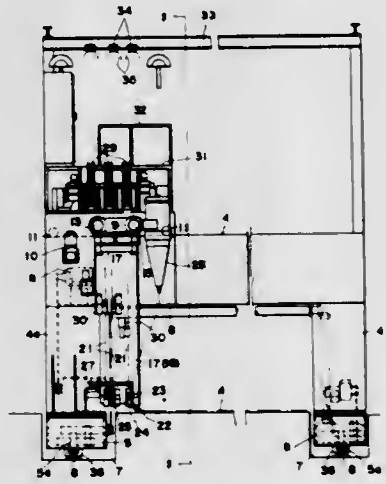
METHOD AND APPARATUS FOR BUTT WELDING PLATES

Hirokazu Noura, Yokohama, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed March 20, 1970, Ser. No. 21,393

Int. Cl. B23k *9/18, 9/12*

U.S. Cl. 219—73 **3 Claims**



A method and apparatus for butt welding plates one to the next. The plates are arranged with the opposed end edges of one plate situated next to adjoining edges of a pair of adjoining plates, and the latter adjoining edges are simultaneously welded to the end edges of the one plate. The plates are arranged in a row with their end edges extending transversely of the row, and a pair of welding means are provided for simultaneously welding the opposed end edges of one plate to the adjoining end edges of the adjoining plates. The pair of welding means are carried by a carriage which is movable transversely of the row of plates, in the direction of the end edges thereof. This carriage is supported for movement on a transverse beam of a bridge crane which is capable of moving longitudinally of the row, and an adjusting structure coacts with the pair of welding means to adjust the distance therebetween so that this latter distance will precisely equal the distance between the opposed end edges of the plate which is simultaneously welded to the adjoining end edges of adjoining plates.

3,702,915

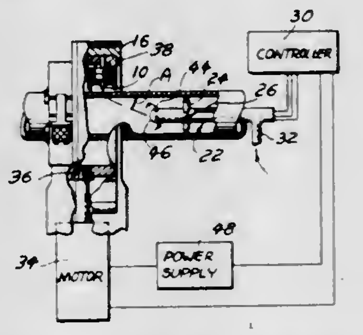
AUTOMATIC MELT-THRU WELDING METHOD AND APPARATUS

Eugene P. Vilkas, Los Angeles, and Gasparas Kazlauskas, North Hollywood, both of Calif., assignors to Astro-Arc Co., Sun Valley, Calif.

Continuation-in-part of Ser. No. 884,572, April 9, 1969. This application Oct. 23, 1970, Ser. No. 83,415

Int. Cl. B23k *9/00*

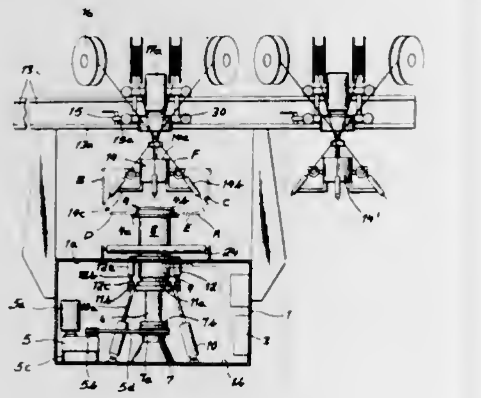
U.S. Cl. 219—137 **8 Claims**



The method of gas tungsten-arc welding wherein an optical sensor is employed to sense melt-thru weld completion and to transmit a signal to a controller effect a variation of the time of the welding current. An apparatus to effect the welding method of this invention comprising the mounting of the optical sensor interiorly of the workpiece at an angle of five degrees to forty five degrees from the weld with respect to the wall of the workpiece, the optical sensor operating through a controller to cause a variation in the welding time.

3,702,916
WELDING UNIT FOR MOTOR CAR WHEELS

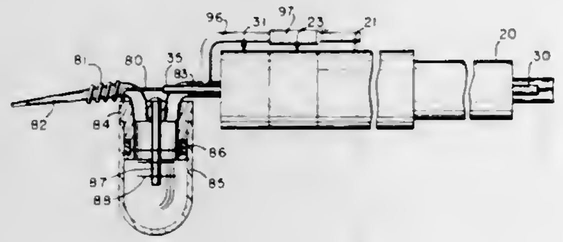
Valerio Dobosan, Brasov, and Nicolae Cascaval, Orasul Sacele, both of Romania, assignors to Uzina de Autocamioane "-Steagul Rosu" Brasov Str. Polenelor, Brasov, Romania
Filed Jan. 4, 1971, Ser. No. 103,677
Int. Cl. B23k *9/12*
U.S. Cl. 219—125 R **10 Claims**



A welding unit for motorcar wheels has a pair of interchangeably mounted welding heads on a horizontal rail for selective alignment with an elevatable and rotatable support for the wheel. The head has a plurality of angularly equispaced electrode-wire feed devices for welding each of the spokes of the wheel but driven by a common motor.

3,702,917
TOOL FOR FORMING AND SHAPING WAX-LIKE SUBSTANCES

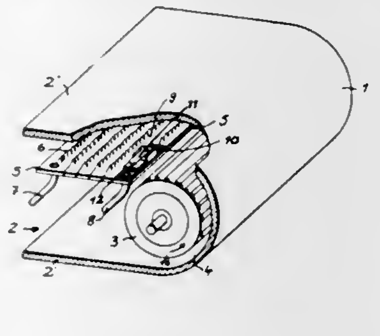
Carl R. Christensen, 5412 Cottage Avenue, San Diego, Calif.
Filed April 16, 1970, Ser. No. 29,097
Int. Cl. H05b *1/00;* **B23k** *3/00;* **A47l** *13/32*
U.S. Cl. 219—230 **2 Claims**

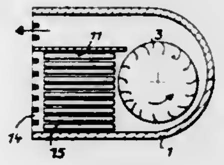


A tool for forming and shaping wax-like substances having an open-ended conduit tool tip with one end forming a working end and the other end being inserted into a wax holding container. The sealed container is supported on a handle and has a tube member that communicates the container with a source of suction through the handle. An electric heating element encircles the tool tip to heat the tool tip and thus the wax. Electrodes connected to the heating element and fitted in sockets in the handle and the tube member support the tool tip and container on the end of the handle. The axis of the container is substantially normal to the axis of the handle, so the heated wax drawn through the tool tip is deposited into the container without communicating through the tube member to the source of suction in the handle. The entire tool head structure is solely supported by the electrodes and the tube member.

3,702,918
FORCED CIRCULATION AIR HEATING UNIT

Heinrich Moller, Kelkheim, Germany, assignor to Braun Aktiengesellschaft, Frankfurt/Main, Germany
Filed June 29, 1970, Ser. No. 50,637
Claims priority, application Luxembourg, July 8, 1969, 59.050
Int. Cl. H05b *3/02;* **F04d** *1/00;* **F24h** *3/04*
U.S. Cl. 219—370 **8 Claims**

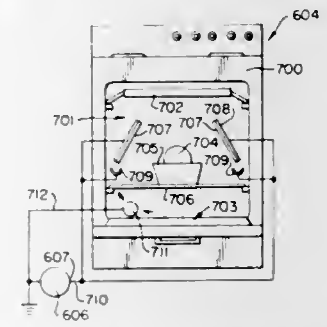




A blower arrangement has a housing which includes upper and lower main walls and a substantially semicylindrical wall connected thereto which defines a substantially semicylindrical section that closes the rear of the housing; the main walls define a channel for the entry and exit of fluid, that has near the housing frontat least one opening for fluid intake and discharge. A rotatable crossflow blower is disposed eccentrically in the substantially semicylindrical section; and a flat partition is disposed in the channel and defines with the blower circumference a gap of about one-twentieth the blower diameter and partitions the channel into entry and exit portions. A heating device may be mounted on the partition, and the entry portion of the channel may open sideways of the housing.

3,702,919
METHOD FOR CLEANING A COOKING APPARATUS USING ELECTROSTATIC MEANS

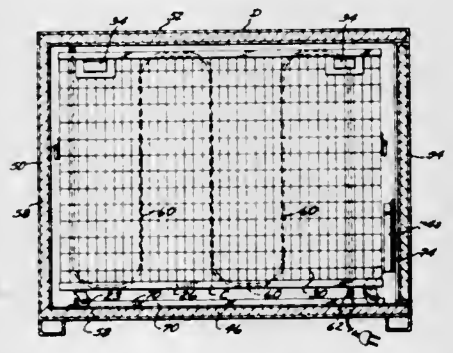
Robert R. Candor, 5940 Munger Road, Dayton, Ohio, and James T. Candor, 5440 Cynthia Lane, Dayton, Ohio
Division of Ser. No. 60,337, Aug. 3, 1970, Pat. No. 3,602,132, which is a continuation-in-part of Ser. No. 848,055, Aug. 6, 1969, Pat. No. 3,546,783, which is a division of Ser. No. 701,946, Jan. 31, 1968, Pat. No. 3,470,716, which is a continuation-in-part of Ser. No. 639,354, May 18, 1967, Pat. No. 3,405,452, which is a continuation-in-part of Ser. No. 532,266, March 7, 1966, Pat. No. 3,330,136, which is a continuation-in-part of Ser. No. 219,587, Aug. 27, 1962, Pat. No. 3,238,750. This application May 14, 1971, Ser. No. 143,633
Int. Cl. F27d *11/00*
U.S. Cl. 219—393 **6 Claims**



A method for cleaning a cooking apparatus having heating means and support means to support article means to be affected by the output of said heating means. The method comprising the steps of disposing electrode means to be carried by the cooking apparatus in electrically spaced relation to the article means, and imposing an electrical potential differential between said article means and said electrode means to tend to cause soiling particles of said article means to move toward said electrode means and be collected thereby during the heating thereof by the heating means to tend to prevent soilage of said cooking apparatus.

3,702,920
TRADING STAMP INVALIDATING APPARATUS AND METHOD OF USING

George G. Taylor, 10040 Van Ruiten, Bellflower, Calif.
Filed May 24, 1971, Ser. No. 146,093
Int. Cl. F27d *11/02*
U.S. Cl. 219—406 **4 Claims**

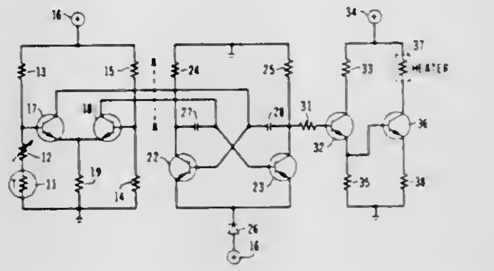


An apparatus for invalidating trading stamps of the type that are placed in disposable paper books for redemption, and the stamps prior to distribution to customers having an insignia defined on the printed surface thereof by a temperature sensitive ink. The apparatus is equally adapted for use in invalidating certificates having redemption value, when the certificates have insignias defined thereon in temperature sensitive ink. The books of stamps or certificates of the above description are received at a customer servicing structure in a redemption center, which structure has a movable locked redeemed stamp book and certificate receiver associated therewith. The receiver when filled with redeemed stamp books or certificates is moved to an electrically operated device, where the stamps or certificates therein are subjected to a predetermined temperature substantially different from that of the ambient temperature for not less than a predetermined length of time, to permanently change the temperature sensitive ink that defines said insignias from a first color to a second color. The second color is one that has a fixed meaning to personnel in the redemption center and indicates that the stamps or certificates have been redeemed. After the stamp containing books or certificates have been so temperature treated they are valueless, and may be freely transported to an area remote from the redemption service center for subsequent delivery as raw stock to a paper mill.

3,702,921
PRECISION TEMPERATURE CONTROL CIRCUIT WITH IMPROVED RELIABILITY

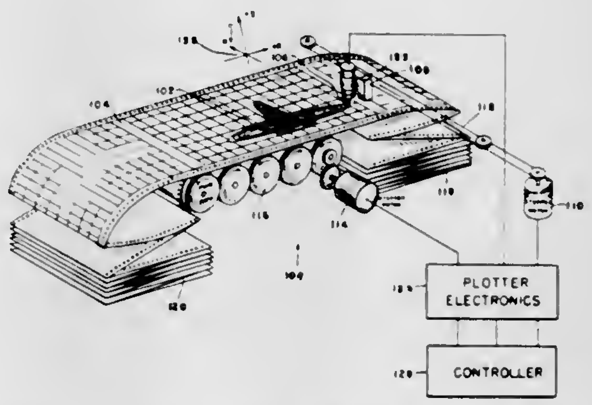
William Thelen, Glen Ellyn, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Sept. 1, 1971, Ser. No. 176,827
Int. Cl. H05b *1/02*
U.S. Cl. 219—501 **4 Claims**

An oven temperature control circuit includes a four-terminal resistance bridge having a thermistor in one of its arms and a voltage source across one of its diagonals, a transistor differential amplifier with input terminals connected across the other bridge diagonal, an astable transistor multivibrator having its timing controlled from the output terminals of the differential amplifier, a heating element, and a heating current supply transistor having its base-emitter path controlled by an output side of the multivibrator and its emitter-collector path connected to supply current to the heating element from a heating power source. Any departure of the thermistor resistance from a predetermined normal value is detected by the bridge and control currents developed by the differential amplifier are used to vary the duty cycle of the output side of the multivibrator. The heating current supply transistor is switched between the nonconducting and saturated states and its duty cycle varied along with that of the output side of the multivibrator, thereby supplying power to the heating element without substantial dissipation in the heating current supply transistor.



3,702,922
CONTROL SYSTEM AND CODE FOR A GRAPHICAL PLOTTING MACHINE OR LIKE APPARATUS

Thomas O. Hall, Jr., Houston, Tex., and William G. Peck, Victor, N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed June 27, 1969, Ser. No. 837,043
Int. Cl. G06k *15/22, 17/00*
U.S. Cl. 235—61.6 R **11 Claims**

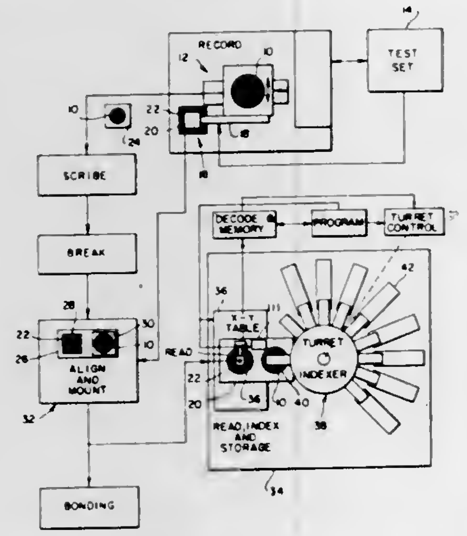


A system for controlling a graphical plotting machine includes receiving output data from a computer's central processing unit arranged in a new code format. The new code format significantly reduces the quantity of data and the time required for the data's transmission to a graphical plotting system in obtaining a given plot from a graphical plotting machine. Incorporation of repeat and tacking control commands in the code structure makes this possible. A controller portion in the graphical plotting system having apparatus responsive to the repeat and tack control commands, receives and decodes the data and then transmits the appropriate commands to the graphical plotting machine.

3,702,923
DIE SORTING SYSTEM

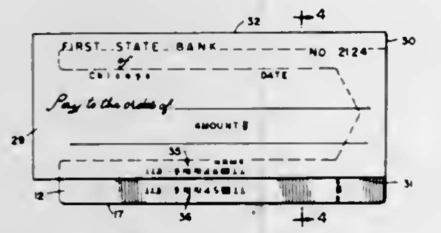
Mordechai Wiesler, Lexington; Virgil Martinonis, Gloucester, and John S. MacIntyre, Lynnfield, all of Mass., assignors to Teledyne, Incorporated, Woburn, Mass.
Division of Ser. No. 785,209, Dec. 19, 1968, Pat. No. 3,583,561. This application Nov. 27, 1970, Ser. No. 93,258
Int. Cl. G06k *7/10*
U.S. Cl. 235—61.11 E **8 Claims**

A wafer of semiconductor devices is tested to determine the quality of each device. The test data with respect to each die is electro-optically encoded and photographically recorded in a pattern corresponding to the die pattern on the wafer. Upon completion of the testing and recording operations the wafer is scored, mounted on a flexible pressure sensitive adhesive web and broken so as to separate the dies from one another while maintaining their original orientation. The dice and their respective test record are then mounted on a common frame, side by side, so that each die and its test data are readily matched. The frame is then mounted on a die sorting mechanism comprised of an XY indexing table which indexes the wafer die by die through a removal station and the film indexed through an electro-optical reader where the test data is read out to designate the die to a selected delivery station.



3,702,924
BACKING MEMBER FOR CHECKS

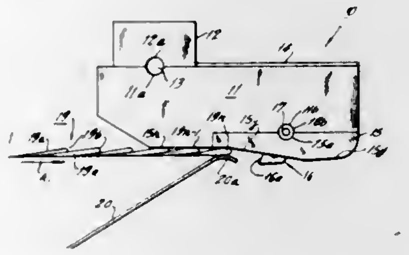
Daniel J. Wood, 510 Sage Valley Dr., Richardson, Tex., and Harold E. Wood, 329 S. Prospect Avenue, Park Ridge, Ill.
Continuation-in-part of Ser. No. 59,068, July 29, 1970, abandoned. This application Nov. 23, 1970, Ser. No. 91,679
Int. Cl. G06k *19/00*
U.S. Cl. 235—61.12 R **3 Claims**



A backing member for generally rectangular articles such as checks, credit card bills, and the like which are to be sorted by automatic magnetic character recognition sorting equipment. The backing member is formed of sheet material and includes a pair of spaced-apart generally parallel longitudinal edges and a transverse lead edge extending perpendicularly between the longitudinal edges. The sheet material is provided with a central opening to define a pair of longitudinal leg portions between the opening and the longitudinal edges and a transverse leg portion between the opening and the transverse edge. If desired, the sheet material can include a second transverse leg extending between the longitudinal legs to close the central opening, or the longitudinal legs can remain unconnected to form a generally C-shaped or U-shaped backing member. Adhesive is applied to one of the longitudinal legs in a manner to leave a portion of that longitudinal edge free of adhesive, and adhesive is applied to one or both of the other longitudinal legs and the transverse leg. The adhesive permits the backing member to be secured to a generally rectangular article with the adhesive-free portion of the first longitudinal leg extending below an edge of the article for the receipt of magnetic indicia.

3,702,925
SIGNATURE COUNTER

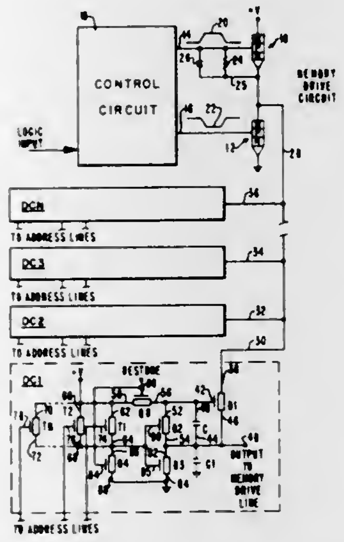
Bruce J. Anderson, and Charles R. Noegel, both of Miami, Fla., assignors to Electronic Design & Services, Inc., Hialeah Gardens, Fla.
Filed July 1, 1971, Ser. No. 158,702
Int. Cl. G06m *7/06*
U.S. Cl. 235—98 R **13 Claims**



Signatures moving in a substantially continuous stream and arranged in overlapping fashion, folded edge forward, pass beneath the counter to activate a signature intercepter mounted with a self-cleaning housing. The intercepter, in turn, drives a cam which activates a cam follower each time a signature passes beneath the intercepter. The cam follower moves an interrupter blade whose positioning alters the magnetic field of a magnet means to control the operation of a switch means providing a switch closure for each signature counted. The cam, cam follower, intercept blade, magnetic field generating means and hermetically sealed switch means are mounted within a separate independent housing maintained in a dirt-free condition whereas the compartment receiving the intercept member is kept dirt-free by virtue of the manner of its operation. The counter housing acts to deviate the signatures from their normal plane of movement immediately after having been counted to facilitate the accuracy of the counting operation regardless of the thickness of the signatures. Spring means may be positioned to the side of the signature stream opposite said counter to eliminate the need for critical adjustment and positioning of the counter relative to the signature stream.

3,702,926
FET DECODE CIRCUIT

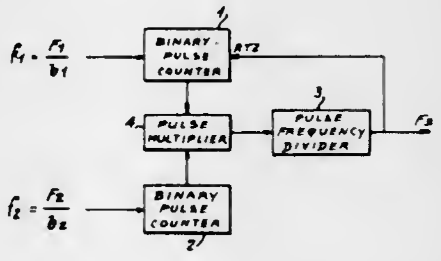
James K. Picciano, South Burlington, and Joseph Zauchner, South Hero, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 30, 1970, Ser. No. 76,878
Int. Cl. H03k *17/60, 13/243*
U.S. Cl. 235—154 **15 Claims**



An FET decode circuit having a bootstrap capacitor connected across the gate and source of an input field effect transistor (FET) in which no current flows through the input FET when the bootstrap capacitor is discharged. Means, preferably an FET with its current flow electrodes connected across the bootstrap capacitor, is provided for completing a discharge path parallel to the boot-strap capacitor and internal to the decode circuit. A discharge path independent of the input field effect transistor is so provided. A memory accessing means including a plurality of the decode circuits may discharge the bootstrap capacitors of unselected decode circuits without pulling current through a memory drive circuit to which the decode circuits are connected.

3,702,927
PULSE RATE DEVICE TO COMPUTE SQUARE ROOT OF PRODUCTS

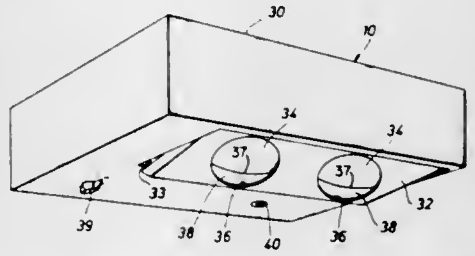
Pierre Andre Dunou, Bagneux, France, assignor to Compagnie des Compteurs, Montrouge, France
Filed Sept. 21, 1970, Ser. No. 73,855
Claims priority, application France, Oct. 2, 1969, 6933636
Int. Cl. G06f *7/48*
U.S. Cl. 235—158 **11 Claims**



Computation of square root of a product of two magnitudes by the steps of converting each of said magnitudes into series of impulses, each having a frequency proportional to the amplitude of said two magnitudes, recording said series of impulses in registers, multiplying the respectively recorded series of impulses to obtain, their product dividing said product by a fixed number in a divider and using the signal issued from said divider to reset one of said registers.

3,702,928
ADJUSTABLE LIGHTING APPARATUS

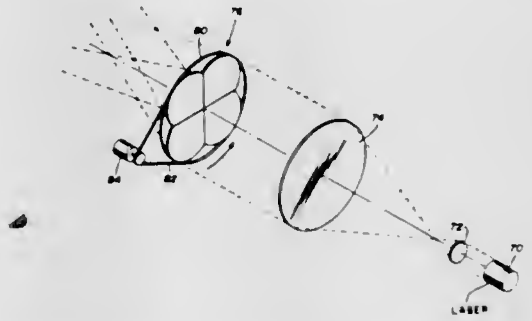
David W. Alger, 101 Pine Shadow, Conroe, Tex.
Continuation of Ser. No. 770,578, Oct. 25, 1968, abandoned. This application March 22, 1971, Ser. No. 126,792
Int. Cl. H61g *13/00;* **F21v** *33/00*
U.S. Cl. 240—1.4 **10 Claims**



In one exemplary embodiment, a remote controlled adjustable dental operating light is provided that projects a light beam having an elongated cross-sectional configuration with the horizontal width being large in comparison to the vertical height of the beam. A pair of light sources each project a beam having an elongated cross-section, the two beam being longitudinally aligned and overlapping to form a single composite beam having an elongated cross-sectional configuration. The light beams are reversibly pivotable about a rotatable axis to adjust the central axis of the light beam to properly illuminate the patient's mouth. Shields provided over a portion of the external area of the light sources mask the bright filaments from the patient's eyes.

3,702,929
COHERENT LIGHT ARRAY FOR USE IN IMAGE PROJECTION SYSTEMS

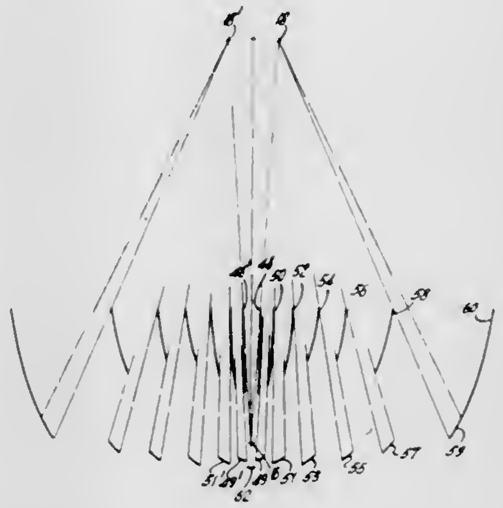
Jack J. Burch, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed July 16, 1970, Ser. No. 55,322
Int. Cl. F21m
U.S. Cl. 240—41 **21 Claims**



The specification discloses a coherent light array including a housing with a plurality of lenses mounted therein. A source of a coherent light beam, such as a laser, is positioned such that portions of the coherent light beam are directed through each of the lenses. The housing is rotated at a speed above the frequency response of the human eye so that pictorial noises, such as Newton Ring Patterns, are substantially reduced or eliminated when the light array is utilized in the projection of film transparencies and the like.

3,702,930
REMOTE ILLUMINATING APPARATUS

Henry G. Joel, New York, N.Y., assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
Filed March 12, 1971, Ser. No. 123,504
Int. Cl. F21v *7/00*
U.S. Cl. 240—41.35 R **10 Claims**

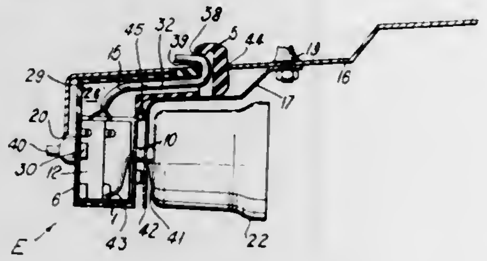


A system for efficiently projecting the light from a point or line light source to a specified area in a remote object plane. Two separate families of concentrically disposed ellipses are positioned to share a common focus and to have the other focus of each ellipse family disposed on the remote object plane, so that the distance between the two focuses on the object plane defines the area on the plane to be illuminated. The light source is placed at the common focus of the two families of ellipses, and elliptical reflecting segments from the two families of ellipses are disposed about the light source to direct the light from the light source to the defined area on the object plane. Proper orientation of the elliptical reflecting segments allows for all of the light from the light source to pass to the designated area on the object plane in one or less reflections against the elliptical reflecting segments.

3,702,931
DEVICE MADE FROM INSULATING MATERIAL FOR ELECTRICAL INSULATION OF A SWITCH IN A WORK-LAMP SHIELD

Jac. Jacobsen, Oslo, Norway, assignor to Jac. Jacobsen A/S, Oslo, Norway

Continuation-in-part of Ser. No. 107,358, Jan. 18, 1971, abandoned. This application Dec. 29, 1971, Ser. No. 213,376
Int. Cl. F21v *23/04;* F21l *15/00;* H01h *9/02*
U.S. Cl. 240—122 17 Claims

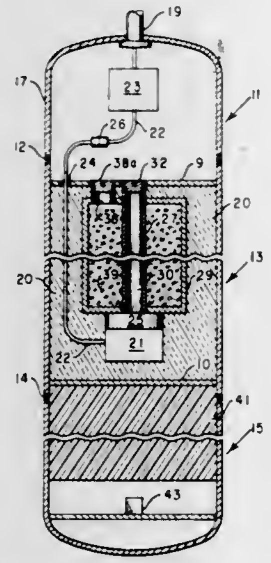


A work lamp has an insulated housing within a shade which encloses the switch and the terminals for the electric cable connected to the switch. The insulated housing is formed of an electrical insulating material and defines a closed insulated chamber in which the switch is mounted. The enclosure has an elongated extension forming an insulated conduit for the electrical cable passing through the lamp's shade to the switch in the insulated chamber. The extension has a free end portion located in an opening the lamp shade and the free end portion has at least two closely adjacent spaced edges clamping the electrical cable in a relatively fixed position therebetween.

3,702,932
MELTING CRYOGEN COOLING FOR RADIATION LOGGING PROBE

Allan B. Tanner, Washington, D.C.; Frank E. Senftle, Chevy Chase, Md., and Robert M. Moxham, Alexandria, Va., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed April 15, 1971, Ser. No. 134,283
Int. Cl. H01j *39/00*
U.S. Cl. 250—83.3 R 2 Claims

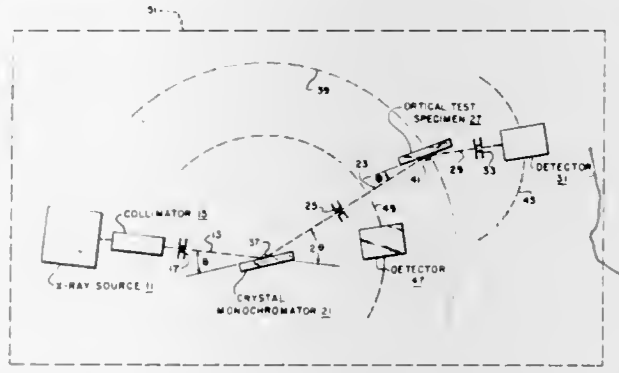


A borehole logging probe for mineral or petroleum exploration is disclosed having a californium-252 neutron source for activating elements adjacent to the borehole and a solid state detector for sensing resulting radiation. The probe includes an elongated watertight housing having a shielded compartment for the neutron source, and a thermally insulated compartment for containing the radiation detector. A reservoir is filled with a fusible solid cryogen and located within the insulated compartment adjacent to the detector with a thermal conduction member disposed to cool the radiation detector by transferring heat to the solid cryogen.

3,702,933
DEVICE AND METHOD FOR DETERMINING X-RAY REFLECTION EFFICIENCY OF OPTICAL SURFACES

Stanley A. Fields, Decatur, and John M. Reynolds, Huntsville, both of Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed July 31, 1970, Ser. No. 59,894
Int. Cl. G01n *23/20*
U.S. Cl. 250—51.5 1 Claim

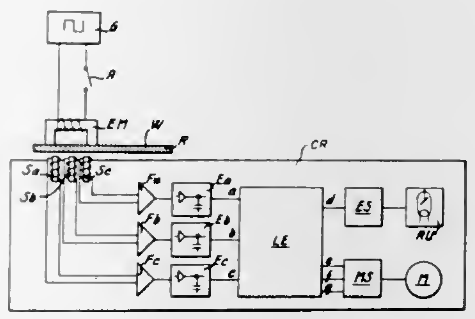


A device and method for testing the X-ray reflection efficiency and scattering properties of various optical surfaces comprising a crystal monochromator mounted to receive and diffract X-rays generated by an X-ray source. The X-rays are diffracted from the crystal so as to impinge on the optical surface being tested. The X-rays reflected by the optical surface are directed toward a detector capable of indicating the intensity of the X-rays reflected by the optical surface. Intensity readings are initially made of X-rays diffracted directly from the crystal to a detector and subsequently are made of the identical X-rays diffracted from the crystal to the optical surface and reflected to a detector. The crystal, optical surface test specimen and detectors are mounted for rotation to desired angle positions and the entire apparatus is enclosed in a vacuum chamber.

3,702,934
APPARATUS FOR CONTROLLING EQUIPMENT ON A CRAWLER DISPLACEABLE INSIDE A PIPE

Niels Jakobsen, Kastrup, Denmark, assignor to Picker-Andrex X-Ray A/S, Copenhagen, Denmark

Filed Sept. 28, 1970, Ser. No. 75,833
Claims priority, application Denmark, Oct. 1, 1969, 5227/69
Int. Cl. G03b *41/16*
U.S. Cl. 250—52 5 Claims

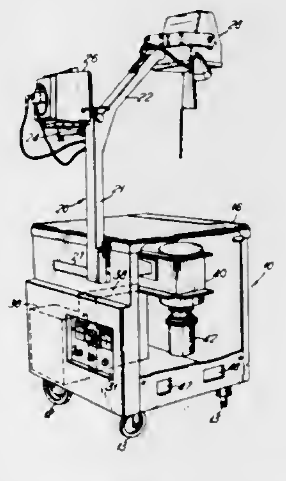


Means for controlling the operation of a crawler adapted to move inside a pipeline and comprising a radiation source, e.g., an X-ray tube, for the inspection of welds in the pipe line. The operation is controlled by means of an AC-supplied electromagnet to be arranged on the outside of the pipe at a certain distance from the weld to be examined. The magnetic field from the electro-magnet is detected by a detector mounted on the crawler and comprising three coils spaced apart in the direction of movement of the crawler. The signals from the three coils are supplied to a logical unit generating control signals for the operation (start, stop, exposure etc.) of the crawler in response to the coil signals. Means may be incorporated for transforming the coil signals into binary DC-signals.

3,702,935
MOBILE FLUOROSCOPIC UNIT FOR BEDSIDE CATHETER PLACEMENT

Lewis S. Carey, London, Ontario, Canada, and George L. Mansour, Minneapolis, Minn., assignors to Litton Medical Products, Inc., Des Plaines, Ill.

Filed Oct. 13, 1971, Ser. No. 188,967
Int. Cl. G01n *23/04*
U.S. Cl. 250—58 2 Claims

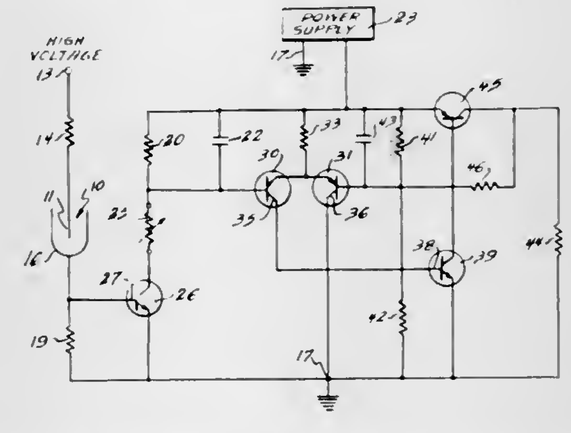


The invention relates to a mobile fluoroscopic unit in the form of a four wheeled cart for facilitating bedside catheter placement. The unit is equipped with integrated X-ray and television viewing apparatus which permits the visualization and accurate positioning of vascular catheters.

3,702,936
DOSE RATE DOSIMETER CIRCUIT

Gerald L. Erickson, Richland, Wash., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed March 19, 1971, Ser. No. 126,222
Int. Cl. G01t *1/18*
U.S. Cl. 250—83.6 R 7 Claims

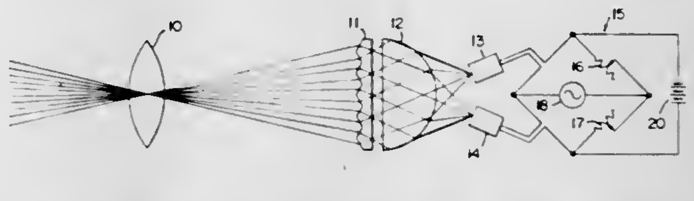


The circuit uses the ionization characteristics of a Geiger-Mueller tube to provide equal energy charging pulses for an integrator. The integrator voltage is compared with a reference voltage to develop an alarm signal when the integrator voltage exceeds a preset level. Both the integrator and the circuit developing the reference voltage are connected to the same power supply so that power supply fluctuations have a minimum effect on the radiation level at which the alarm operates. A single variable resistance can be used to change the ranges over which the dosimeter operates.

3,702,937
MOTION DETECTOR

Iben Browning, Sunnyvale, Calif., assignor to Microlens, Inc.

Filed May 1, 1968, Ser. No. 725,795
Int. Cl. H01j *39/12*
U.S. Cl. 250—210 4 Claims

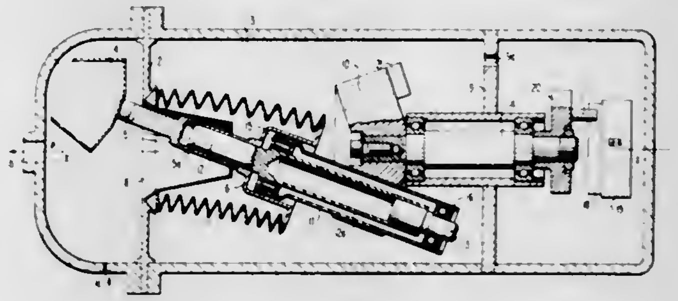


A motion detector is disclosed wherein an image of the surveyed field is divided by a planar array of Fresnel biprisms into two portions focused on separate photocells. The photocells are incorporated in a balanced bridge circuit having a signal device connected between the null points of the bridge. Differential lighting from a moving object unbalances the bridge activating the signal device.

3,702,938
ELECTRIC GENERATOR DRIVE

Henri Louis Garnier, Courbevoie, France, assignor to Compagnie Francaise des Petroles, Paris, France

Filed April 16, 1971, Ser. No. 134,780
Claims priority, application France, April 17, 1970, 7013987
Int. Cl. H02k *7/18*
U.S. Cl. 290—52 2 Claims



An electric generator drive device for use at an underwater drilling installation, which uses the kinetic energy of a pressurized fluid coming from the bore hole to drive the generator for supplying electric power to the installation.

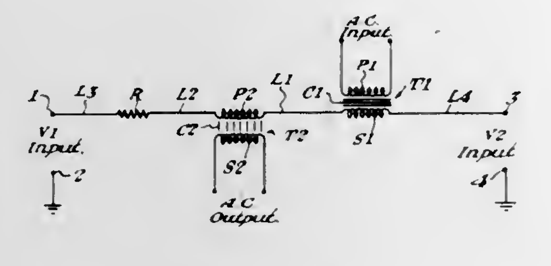
The moving fluid escaping from the bore hole is directed into a chamber tangentially to its walls and is evacuated through an axial opening so as to engender a vortex flow that moves a mass attached to a casing which is guided by a shaft that moves to describe a conical movement. The shaft brings about the rotation of an alternator or alternating-current generator, separated from the chamber by a diaphragm and separated from the outside environment by a container filled with oil.

3,702,939
FAIL-SAFE COMPARATOR

John O. G. Darrow, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed March 4, 1971, Ser. No. 120,993
Int. Cl. G01r *17/02*
U.S. Cl. 307—2 6 Claims

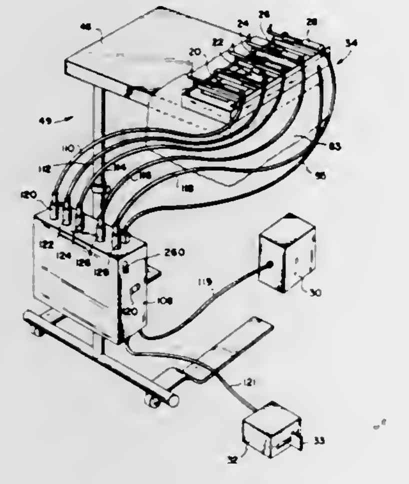
This disclosure relates to a fail-safe comparator circuit having an input transformer, the primary of which is fed by an a.c. signal voltage. The secondary winding of the first transformer is serially connected to the primary winding of a saturable type of output transformer. A current-limiting resistor forms a series circuit with the secondary winding of the input transformer and the primary winding of the output transformer. A separate d.c. input voltage is applied to each end of the series circuit so that a.c. output signals are induced into the seconda-



ry winding of the output transformer when and only when the d.c. input voltages are in agreement and no critical circuit or component failure is present.

3,702,940
INSTRUMENT CONTROL SYSTEM

James M. Stewart, West Palm Beach, Fla., assignor to Stewart Research, Inc., West Palm Beach, Fla.
Filed June 9, 1971, Ser. No. 151,233
Int. Cl. H02j *7/00*
U.S. Cl. 307—92 **12 Claims**

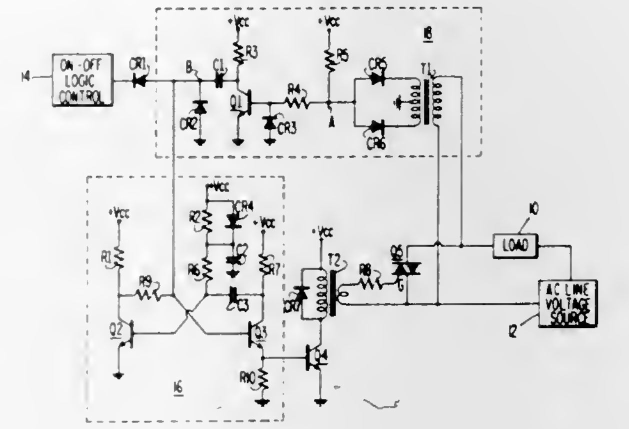


A control system is provided for selectively and randomly operating a plurality of surgical instruments from a power source with a single operator controlled switch. The system includes an instrument supporting tray including a plurality of instrument holders for receiving and holding the surgical instruments, a sensing circuit for sensing removal of any one of the surgical instruments from its holder, a power source operated by an operator controlled switch and a control circuit operatively connected to the sensing circuit for connecting the power source to a surgical instrument when it is removed from its holder while preventing the remaining surgical instruments from being operated by the power source.

3,702,941
ZERO CROSSING POINT SWITCHING CIRCUIT

Carl Joseph Alduck, North Palm Beach, and Ronald Alfred Mancini, Lake Park, both of Fla., assignors to RCA Corporation
Filed June 14, 1971, Ser. No. 152,815
Int. Cl. H01h *9/56*
U.S. Cl. 307—133 **10 Claims**

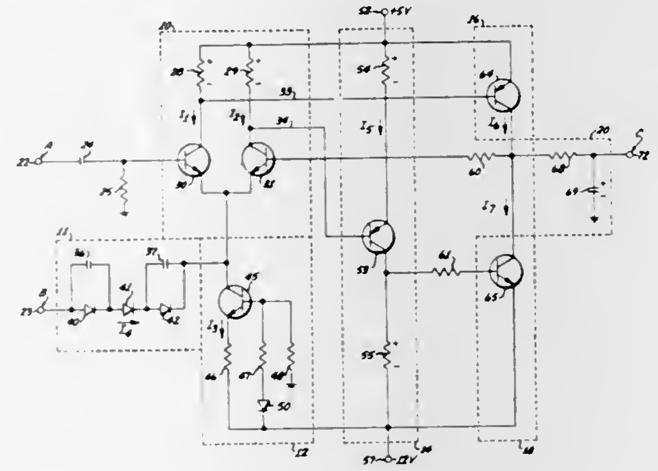
A switching circuit which is utilized to switch a.c. loads in electrical equipment as a function of the a.c. line signal. The switching circuit is switched to supply the line signal to the load at the zero-crossover points of the line signal whereby



radio frequency interference generated by switching the a.c. load is reduced.

3,702,942
SIGNAL SAMPLING CIRCUIT

Michael C. Aguirre, Oklahoma City, Okla., assignor to Honeywell Information Systems Inc., Waltham, Mass.
Filed June 29, 1971, Ser. No. 158,032
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 R **2 Claims**

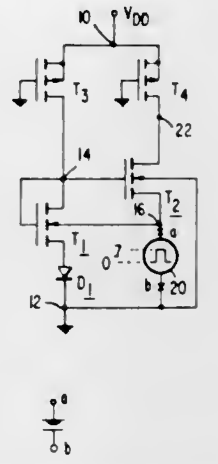


A current-mode amplifier is connected in series with a current source which turns the amplifier on or off in response to signal voltages connected to the current source. The current-mode amplifier samples signals from a source of signals only when the amplifier is turned on. Diodes, connected between a source of signal voltages and the current source, store electrical charges which aid the current source in providing fast turn on and fast turn off so that a high rate of sampling is possible.

3,702,943
FIELD-EFFECT TRANSISTOR CIRCUIT FOR DETECTING CHANGES IN VOLTAGE LEVEL

Robert Charles Heuner, Somerset, and Richard Plumb, Fillmore, Union, both of N.J., assignors to RCA Corporation
Filed Nov. 5, 1971, Ser. No. 196,018
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 **14 Claims**

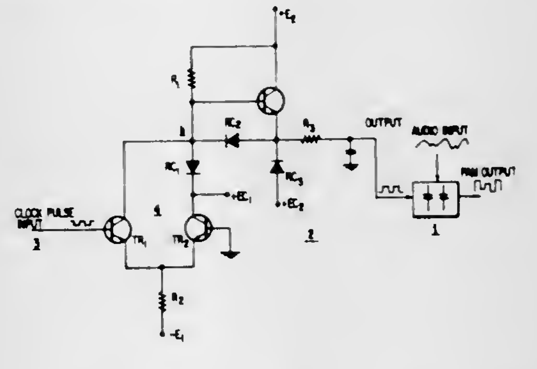
Two field-effect transistors interconnected in such a way that the output voltage produced by the first, which is a function of its voltage threshold, controls the conductivity of the second. One transistor may be reverse biased source-to-substrate to maintain its threshold voltage higher than that of the other. A small change in voltage level may be detected by this circuit by causing that change concurrently to reduce the



source-to-substrate reverse bias of the first transistor and to reverse bias the source-to-substrate of the second transistor.

3,702,944
PULSE AMPLIFIER

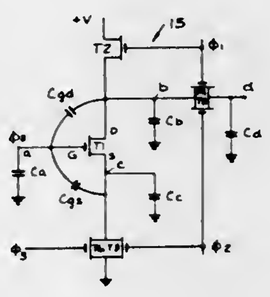
Seiichiro Shigaki, Kanagawa, Japan, assignor to Communication Satellite Corporation, Washington, D.C.
Filed Feb. 24, 1971, Ser. No. 118,241
Int. Cl. H03k *17/56*
U.S. Cl. 307—246 **2 Claims**



Pulse amplifier for use with a capacitive load which produces output pulses having a short rise and fall time. The amplifier is basically a current-mode-switch having an emitter follower circuit uniquely connected at its output to reduce the storage effect of stray capacitance in the load circuits.

3,702,945
MOS CIRCUIT WITH NODAL CAPACITOR PREDISCHARGING MEANS

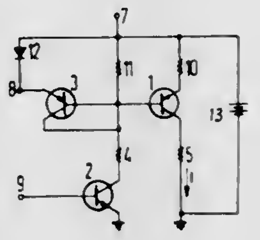
Jack L. Faith, San Jose; Lee L. Boysel, and Joseph P. Murphy, both of Saratoga, all of Calif., assignors to Four-Phase Systems, Inc., Cupertino, Calif.
Filed Sept. 8, 1970, Ser. No. 70,375
Int. Cl. H03k *17/00*
U.S. Cl. 307—251 **17 Claims**



A multiphase inverter type circuit with MOS elements, in which nodal capacitor precharging and conditional discharging takes place, is disclosed. The inverter type circuit, in addition to the conventional elements, includes one or more additional MOS elements which are used to predischarge all nodal capacitors prior to the precharging phase. Such predischarging insures that during conditional discharging even though charges are coupled out of gate capacitors of input MOS elements, which are turned ONdue to appropriate binary inputs, supplied thereto, through the parasitic capacitors of the latter-mentioned elements, the coupled-out charges do not affect the ON state of the elements to which the binary inputs are applied. By predischarging all nodal capacitors, during precharging charges are coupled into the gate capacitors of the input MOS elements through their parasitic capacitors. These charges are equal to the charges which are coupled out during the subsequent conditional discharging phase. Consequently, the net charges at the gate capacitors are not affected by the charges coupled in and coupled out through the parasitic capacitors, whose adverse effect is thereby cancelled.

3,702,946
CIRCUITS FOR REGULATING A CURRENT

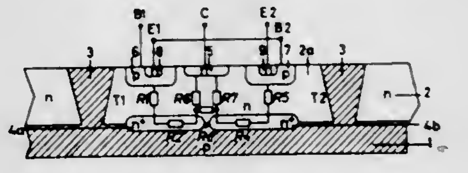
Wolfgang Kraft, Bad Hersfeld, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed March 24, 1971, Ser. No. 127,454
Claims priority, application Germany, March 25, 1970, P 20 14 351.5
Int. Cl. G05f *1/40*
U.S. Cl. 307—297 **14 Claims**



The current flow through a series leg, composed of the collector-emitter path of a transistor, of a load resistor connected to the collector, and of a substantially non-inductive resistor connected to the emitter, is regulated by a reference voltage provided between the free terminal of the latter resistor and the base of the transistor. The voltage can vary linearly with the operating voltage applied to the said free end, in dependence on temperature, or in dependence on some other factor, or can be constant. A diode can be conductively connected between the base and the reference voltage. The resistance of the load resistor is less than that of the substantially non-inductive resistor.

3,702,947
MONOLITHIC DARLINGTON TRANSISTORS WITH COMMON COLLECTOR AND SEPERATE SUBCOLLECTORS

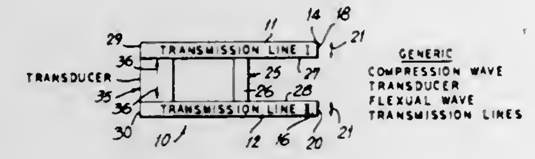
Harald Schilling, Freiburg, Germany, assignor to ITT Industries, Inc., New York, N.Y.
Filed Oct. 14, 1971, Ser. No. 189,113
Claims priority, application Germany, Oct. 21, 1970, P 20 51 536.0
Int. Cl. H01l *19/00*
U.S. Cl. 307—303 **2 Claims**



The saturation voltage of a monolithic integrated Darlington circuit consists of the collector emitter saturation voltage of the driver transistor and the base-emitter threshold voltage of the end transistor. The collector current of the end transistor flows over a semiconductor region which is in common with the collector circuit of the driver transistor causing the saturation voltage to rise. This problem is solved by dividing the usually mutual buried layer of the two transistors into two separate buried layers.

3,702,948
ULTRASONIC MOTORS AND SCISSORS

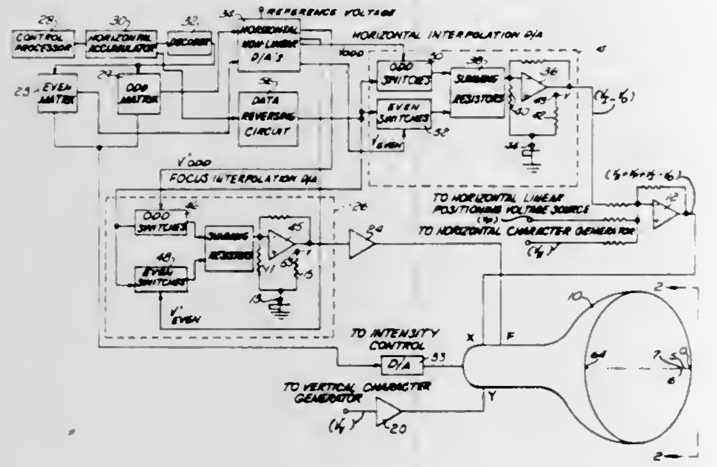
Lewis Balamuth, New York, N.Y., assignor to Ultrasonic Systems, Inc., Farmingdale, N.Y.
Continuation-in-part of Ser. No. 38,149, May 18, 1970, Pat. No. 3,666,975. This application Jan. 7, 1972, Ser. No. 216,130
Int. Cl. H04r *17/00*; **H01v** *7/00*
U.S. Cl. 310—8.2 **28 Claims**



An ultrasonic motor construction wherein the compressional wave mechanical energy is transmitted through a transmission member into flexural vibrational wave energy to a working tip or surface removed a distance from the transducer associated therewith. Various forms of ultrasonic motor constructions are illustrated as in the form of a welding instrument or scissor. The ultrasonic motor operates between 10,000 cps and 500,000 cps and produces peak accelerations of the order of the last 1,000g.

3,702,949
COMPENSATION SYSTEMS FOR CATHODE RAY TUBE DISPLAY SYSTEMS

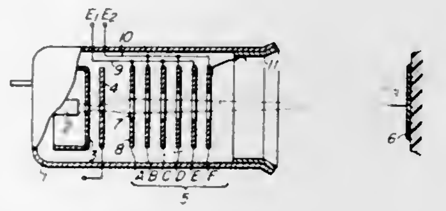
Edwin R. Kolb, University Heights, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed Jan. 7, 1970, Ser. No. 1,124
Int. Cl. H01j *29/70*
U.S. Cl. 315—22 **21 Claims**



A phototypesetting system employs a cathode ray tube to display characters sequentially on a cathode ray tube so that they may be photographed. A horizontal electron beam positioning voltage, a horizontal character generating voltage and a horizontal position correction voltage, which compensates for horizontal positioning non-linearities of the electron beam, are coupled through a summing amplifier to the horizontal deflection plates of the cathode ray tube. A focus voltage is supplied through another amplifier to the focus electrode of the cathode ray tube to compensate for undesired focus variations of the cathode ray tube which occur as the position of the electron beam changes. An intensity control voltage which is coupled to the intensity control element of the cathode ray tube is also compensated for undesired intensity variations in accordance with a selected zone position of the visual spot that is formed by energization of the electron beam of the tube at a desired location on the screen of the cathode ray tube.

3,702,950
ELECTROSTATIC FOCUSSING-TYPE TELEVISION PICTURE TUBE UTILIZING A PLURALITY OF METAL DISKS

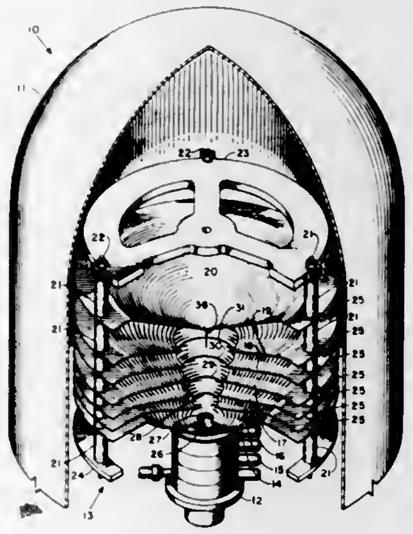
Hiroto Nakamura, Takatsuki, Japan, assignor to Matsushita Electronics Corporation, Osaka, Japan
Filed April 17, 1970, Ser. No. 29,519
Claims priority, application Japan, April 21, 1969, 44/34362
Int. Cl. H01j *29/56*
U.S. Cl. 315—31 R **3 Claims**



An electrostatic focussing-type television picture tube wherein a plurality of ring-shaped metal plates are successively coaxially stacked to form an electrode assembly with the plates being separated, a relatively small space between adjacent plates. This electrode assembly is placed between a first accelerating electrode and a screen, whereby a periodic electric field is produced by the electrode assembly to thereby provide a lens effect of a main lens which is apparently a unitary system and which is moreover substantially free of aberration.

3,702,951
ELECTROSTATIC COLLECTOR FOR CHARGED PARTICLES

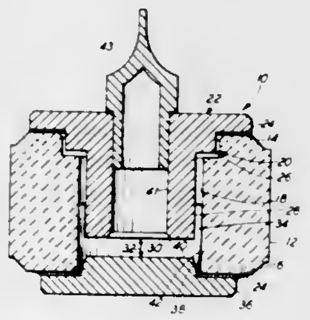
Henry G. Kosmahl, Olmsted Falls, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Nov. 12, 1971, Ser. No. 198,285
Int. Cl. H01j *23/02*
U.S. Cl. 315—5.38 **10 Claims**



A charged particle collector comprising a stack of apertured electrode plates which lie within an imaginary sphere is provided. The plate closet to a charged particle emitter forms a portion of the imaginary sphere and is at zero volts potential with respect to the emitter. The plate farthest away from the charged particle emitter is of conical shape with the apex pointing toward the emitter and includes a spike extending toward the emitter. The conical plate has either a negative or positive potential with respect to the emitter, depending on whether the charged particles are negative or positive. A plurality of intermediate apertured electrode plates are positioned between the plate which forms a portion of the sphere and the conical plate, each of the plates being at a slightly lower potential than the preceding plate moving in a direction toward the emitter. These intermediate plates approximate the shape of an equipotential line which would be plotted for the particular voltage applied to the plate.

3,702,952
GAS TUBE SURGE PROTECTIVE DEVICE AND METHOD FOR MAKING THE DEVICE

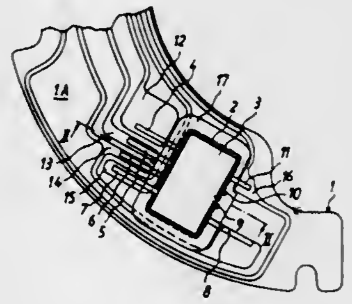
Glenn Cassidy, Upper Black Eddy; Donald A. Hartman, Hellertown; Lyle J. Hentz, Whitehall, and William D. Horn, Nazareth, all of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.
Filed Oct. 12, 1971, Ser. No. 188,208
Int. Cl. H02h *9/06*
U.S. Cl. 317—62 **12 Claims**



A gas filled surge protective device having two conventional electrodes is provided with a starter electrode. This electrode is formed in place on the wall of the device by controlled sputtering of electrode material. The sputtered material is electrically connected to one electrode and surrounds a portion of the other electrode so that ionization starts in the annular space therebetween.

3,702,953
PRINTED CIRCUIT ARRANGEMENT

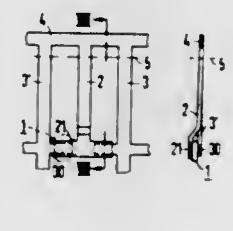
Gunter Fauth, Unterhaching, and Rainer Spinnler, Munich, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed April 27, 1971, Ser. No. 137,767
Claims priority, application Germany, April 28, 1970, G 70 16 022.4
Int. Cl. H05k *1/18*
U.S. Cl. 317—101 CP **6 Claims**



A printed circuit arrangement for use as a compact part of the exposure control in a photographic apparatus has an insulating plate provided with a recess for a portion of or an entire prefabricated electrical or electronic component with several coplanar terminals which contact discrete coplanar conductors applied (by printing or otherwise) to one surface of the plate. An insert of insulating material is interposed between overlapping portions of one or more conductors and one or more terminals to prevent the flow of current between those conductors and those terminals which must be insulated from each other when the plate is built into a photographic apparatus. The outline of the recess conforms to the outline of the component and the insert surrounds a portion of or the entire component and is bonded or clamped to the plate to remain in requisite position.

3,702,954
SEMICONDUCTOR COMPONENT AND METHOD OF ITS PRODUCTION

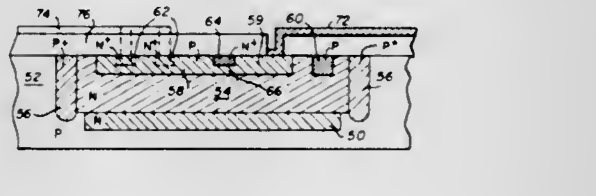
Willi Mosch, Munich; Gerhard Lutz, Erlangen; Lothar Putter, Munich; Erich Waldkotter, Munich, and Heinz Martin, Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munchen, Germany
Continuation of Ser. No. 746,614, July 19, 1968, abandoned. This application June 22, 1971, Ser. No. 155,615
Claims priority, application Germany, July 21, 1967, P 16 14 567.8
Int. Cl. H01l *5/00*
U.S. Cl. 317—234 R **1 Claim**



A semiconductor p-n junction device having a monocrystalline body, preferably of silicon, is equipped with connector leads which are punched out of sheet material and are soldered to the electrodes of the device. Each connector lead has at least one springy clamping lug protruding toward the other connector lead and located beside a clamping lug of another connector lead. The semiconductor body is clamped between the lugs of two superpositioned adjacent connector leads and is soldered thereto.

3,702,955
MULTIPLE EMITTER TRANSISTOR APPARATUS

Jeffrey C. Kalb, San Jose, and Robert J. Widlar, Mountain View, both of Calif., assignors to National Semiconductor Corp., Santa Clara, Calif.
Filed July 11, 1969, Ser. No. 840,987
Int. Cl. H01l *19/00*
U.S. Cl. 317—235 R **3 Claims**



A non-gold doped multiple emitter transistor device having an additional lateral PNP transistor formed in the collector region and a debiasing resistance formed in the base region, these elements cooperating to suppress the inherent PNP beta to substrate characteristic and control the inverse H_{fe} of the device. The emitter of the additional transistor is connected to the base of the MET through a pinch-type debiasing resistor formed in a projection of the base region of the MET, and the base and collector of the additional transistor are shorted together and connected to the collector of the MET so as to provide a shunt path around the base-collector junction thereof.

3,702,956

JOSEPHSON JUNCTIONS

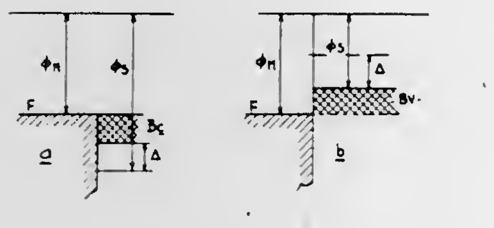
Michel Renard; Philippe Cardinne, and Bernard Manhes, all of Grenoble, France, assignors to L'Air Liquide Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris, France

Filed April 7, 1971, Ser. No. 132,051

Claims priority, application France, April 13, 1970, 7013204

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 317—234 R **18 Claims**



The invention relates to a Josephson type junction and, according to the invention, this is constituted by a layer 1 of semiconducting material inserted between two superconductors 2 and 3. These superconductors are chosen such that the Fermi level of these superconductors falls at the location of the contact with the semiconductor material externally of the forbidden gap of the said semi-conductor. Junctions according to the invention may be used in high frequency current techniques when a D.C. voltage is applied, thus permitting the manufacture of generators or receivers operating at high frequency.

3,702,957

VARIABLE CAPACITANCE DISPLACEMENT TRANSDUCERS

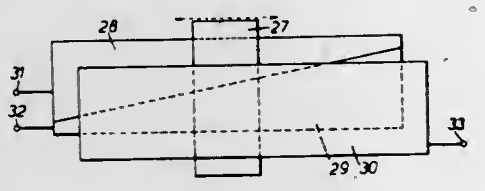
Peter Caleb Frederick Wolfendale, Chiltern Close, Great Brickhill, Bletchley, Buckinghamshire, England

Filed Jan. 19, 1971, Ser. No. 107,636

Claims priority, application Great Britain, Jan. 23, 1970, 3,407/70

Int. Cl. H01g *5/00*

U.S. Cl. 317—246 **5 Claims**



A capacitive position transducer in which a movable element controls the ratio of the capacitances of two capacitors. The movable element is a screen which, in the preferred embodiments, moves between the plates of one of the capacitors thereby changing its capacitance. The ratio of said capacitances is used to provide an indication of the position of the screen and hence of the movable element.

3,702,958

VARIABLE CAPACITOR

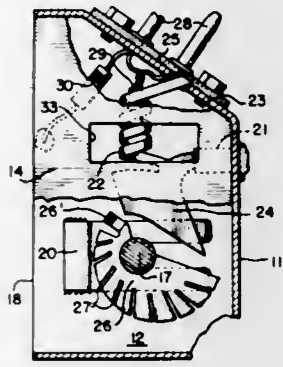
Wayne H. Reynolds, Park Ridge, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Feb. 7, 1964, Ser. No. 343,281

Int. Cl. H01g *5/06*

U.S. Cl. 317—253 **4 Claims**

A continuously adjustable UHF tuner has a multi-compartmented housing each of which has a tunable frequency selector. These selectors are essentially identical to one another in respect of dimension and configuration. Each is made up of a multi-turn inductor which, in conjunction with the compartment walls, constitutes an approximately quarter-wave transmission line at the high frequency end of the tuning band and also of an adjustable capacitor for tuning the selector over a band equal in width to the UHF band. The capacitor has both stationary and movable electrodes. The former is an extension of an end turn of the inductor and the latter has a main body portion and another portion which is located at one end of the main body portion and is adjustable transversely relative thereto. The movable electrode has a first extreme position which is one of minimum capacitance and in which the aforesaid other portion of the movable electrode is the predominant tuning adjustment and is used to establish the high frequency end of the tuning range. The other extreme or maximum capacitance position of the movable electrode determines the low frequency end of the tuning range and a control shaft permits displacement of the movable electrode between these two extreme positions to tune the selector over its range.



3,702,959

ELECTRIC CONTROL MOUNTING, NOTABLY FOR MOTORIZED LIFT TRUCK

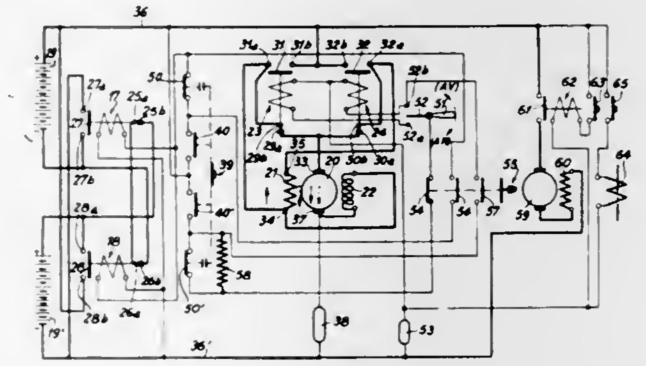
Andre Le Gloan, Argentan, France, assignor to Societe D'Etudes De Brevets Et D'Applications Technologiques (S.E.B.A.T.), Paris, France

Filed April 7, 1971, Ser. No. 131,899

Claims priority, application France, April 10, 1970, 7013027

Int. Cl. H02p *7/00*

U.S. Cl. 318—139 **5 Claims**



This electric mounting, including a coupler and a reversing switch, is intended primarily but not exclusively for controlling the operation of a fork lift truck and comprises essentially in a twin-battery and d.c. motor driving assembly incorporating a two-position switch providing a low starting speed and a higher or normal travel speed, a reversing switch for operating the motor in either direction, and a safety cut-out switch adapted to be actuated by an obstacle likely to be struck by the front of the truck, a pair of relays of known type having a built-in front contact actuated by the inner end of its plunger core and to which a back contact is added on the outer end of said plunger core.

3,702,960

SAFETY DEVICE FOR ELECTRICAL WINDOW REGULATOR

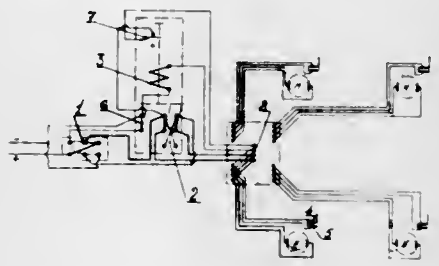
Paul Boyriven, Paris, France, assignor to Compagnie Industrielle De Mechanismes, Courbevoie, France

Filed Dec. 3, 1970, Ser. No. 95,273

Claims priority, application France, May 4, 1970, 7016143

Int. Cl. H02p *1/22*

U.S. Cl. 318—266 **3 Claims**



A safety device for an electrical window regulator comprising a wiring circuit for energizing the window regulator including a double-pole reverser operated by buttons permitting raising or lowering of the window of a vehicle, a pressure detector responsive to the insertion of an obstacle between the top of the window and the top of the door of the vehicle, and a time lagged reversing relay responsive to the pressure detector for reversing the conductors of said wiring circuit for lowering the window. The safety device includes a device responsive to operation of the time-lagged relay for preventing the double-pole reverser from causing raising of the window during the time-lag of the relay.

3,702,961

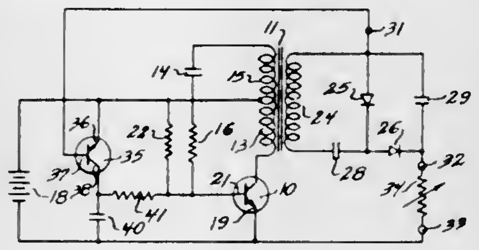
DEMAND REGULATED DC TO DC POWER SUPPLY

Gerald L. Erickson, Richland, Wash., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed March 19, 1971, Ser. No. 126,223

Int. Cl. H02m *3/32*

U.S. Cl. 321—2 **3 Claims**



A blocking oscillator dc to dc converter is used to supply voltage to a variable load. The load current is amplified and the amplified load current is integrated to provide a driving current which is a function of the load current. The driving current is supplied to the blocking oscillator to increase the frequency of the blocking oscillator as the load current increases.

3,702,962

AC TO DC RECTIFIER CIRCUIT WITH RAPID TURN-OFF IN CASE OF OVERCURRENT THROUGH THE LOAD CIRCUIT

Rolf Wohr, Leonberg, and Eckart Gotz, Marbach, both of Germany, assignors to Robert Bosch GmbH, Gerlingen-Schillerhohe, Germany

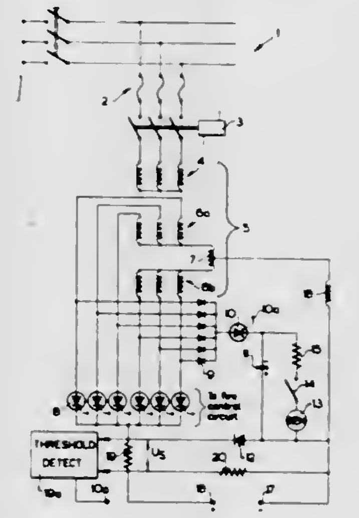
Filed Nov. 9, 1971, Ser. No. 196,912

Claims priority, application Germany, Jan. 7, 1971, P 21 00 415.9

Int. Cl. H02m *1/18;* **H02p**

U.S. Cl. 321—14 **11 Claims**

A plurality of main rectifiers are connected to a transformer secondary with one terminal, the other terminal being connected to the load circuit. A sensing circuit is provided to detect over-current conditions. A rapid turn-off circuit is connected to provide reverse current to the rectifier elements, the rapid turn-off circuit being triggered by the sensing circuit and having a series connected control switch, typically a thyristor (SCR), an energy storage device (typically a condenser) and a pair of connections, one of which preferably includes a diode, and connects back to the load terminal of the main rectifier, the other connection, preferably including a smoothing choke, being connected back to the transformer, so that, when the thyristor is triggered, reverse current will be applied to the rectifier and, additionally, the thyristor will be held conductive by current through the transformer and the thyristor connection to the rectifiers.



3,702,963

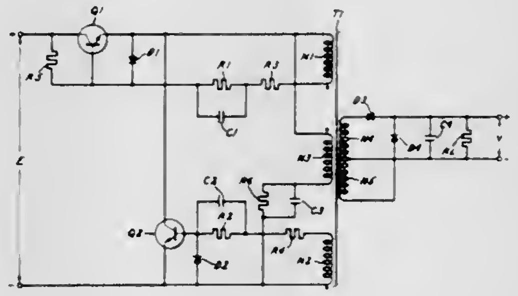
2-TRANSISTOR SATURATING CORE HIGH-VOLTAGE INVERTER

Lawrence E. Donovan, Liverpool, N.Y., assignor to General Electric Company

Filed Aug. 24, 1971, Ser. No. 174,479

Int. Cl. H02m *3/28*

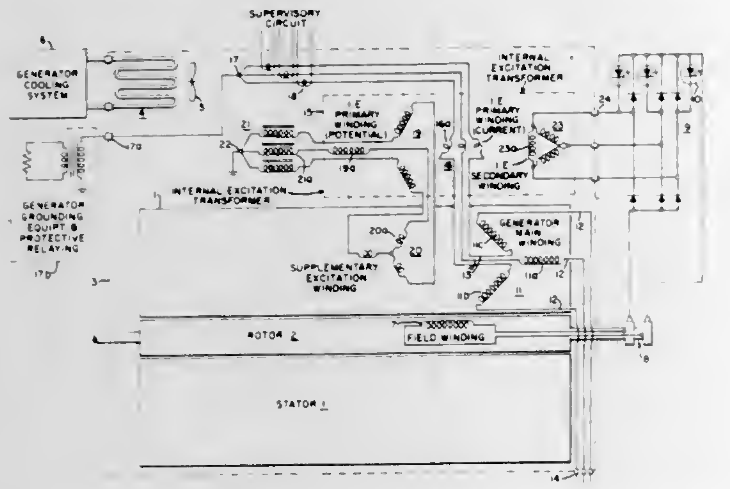
U.S. Cl. 321—2 **8 Claims**



A source of direct voltage of relatively high magnitude is connected to the input winding of a saturable core transformer via a first path including one transistor in series with a capacitor which is charged to one-half the source voltage. The capacitor and the input winding are interconnected by a second transistor which, when conducting applies the capacitor voltage to the input winding with a polarity opposite to that of the source voltage. The two transistors are so controlled that they conduct alternately, with their conducting states being reversed each time the transformer core saturates. A load circuit is energized from the voltage induced in an output winding of the transformer.

3,702,964
INTERNAL STATIC EXCITATION SYSTEM FOR A DYNAMOELECTRIC MACHINE

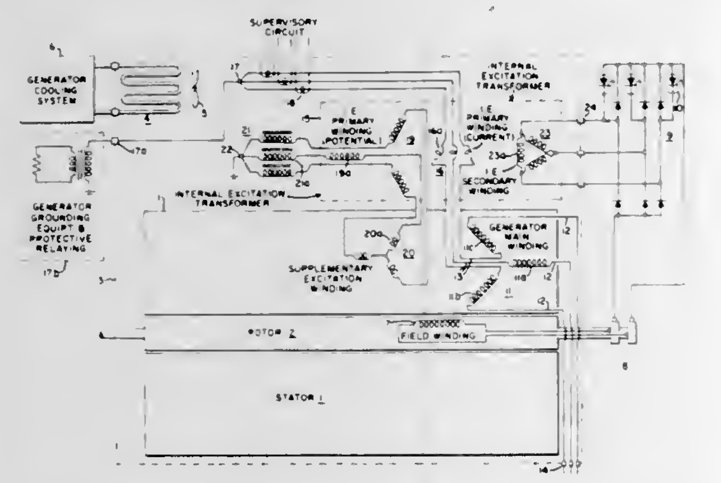
Henry W. Kudlacik, Schenectady, and David M. Willyoung, Scotia, both of N.Y., assignors to General Electric Company
Filed June 22, 1971, Ser. No. 155,512
Int. Cl. H02p *9/14*
U.S. Cl. 322—59 **14 Claims**


SUPERVISORY CIRCUIT
GENERATOR COOLING SYSTEM
INTERNAL EXCITATION TRANSFORMER
I.E. PRIMARY WINDING (POTENTIAL)
I.E. PRIMARY WINDING (CURRENT)
I.E. SECONDARY WINDING
INTERNAL EXCITATION TRANSFORMER
GENERATOR GROUNDING EQUIPT & PROTECTIVE RELAYING
GENERATOR MAIN WINDING
SUPPLEMENTARY EXCITATION WINDING
ROTOR 2
FIELD WINDING
STATOR 1

A static excitation system is provided for self-excitation of a large generator with gas and/or liquid cooling systems which is located inside or closely coupled to the generator casing so as to utilize the generator coolant system. The static excitation transformer preferably has one primary winding connected to a supplementary winding in the dynamoelectric machine slots responsive to the generator field flux and another primary winding comprised of the neutral leads of the generator main winding responsive to generator current. The secondary of the internal excitation transformer thus provides a compound voltage source, responsive to both generator field flux and generator current which is then rectified and applied through suitable controls to the generator field.

3,702,965
INTERNAL STATIC EXCITATION SYSTEM FOR A DYNAMOELECTRIC MACHINE

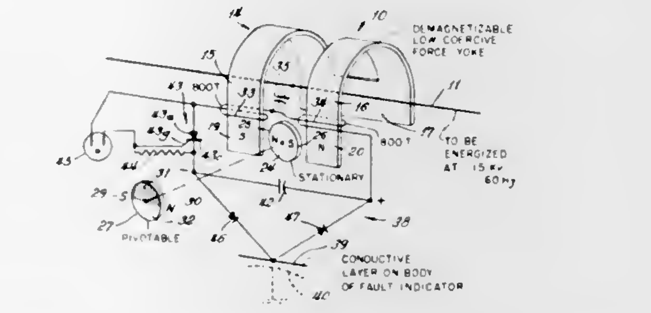
Karl F. Drexler, Burnt Hills, and Henry W. Kudlacik, Schenectady, both of N.Y., assignors to General Electric Company
Filed June 22, 1971, Ser. No. 155,511
Int. Cl. H02p *11/00*
U.S. Cl. 322—25 **7 Claims**


SUPERVISORY CIRCUIT
GENERATOR COOLING SYSTEM
INTERNAL EXCITATION TRANSFORMER
I.E. PRIMARY WINDING (POTENTIAL)
I.E. PRIMARY WINDING (CURRENT)
INTERNAL EXCITATION TRANSFORMER
GENERATOR GROUNDING EQUIPT & PROTECTIVE RELAYING
GENERATOR MAIN WINDING
SUPPLEMENTARY EXCITATION WINDING
ROTOR 2
FIELD WINDING
STATOR 1

A static excitation system is provided for self-excitation of a large generator with gas and/or liquid cooling systems which is located inside or closely coupled to the generator casing so as to utilize the generator coolant system. The static excitation transformer has one primary winding connected to a supplementary winding in selected dynamoelectric machine slots responsive to the generator field synchronous flux and another primary winding comprised of the neutral leads of the generator main winding responsive to generator current. The secondary of the internal excitation transformer thus provides a compound voltage source, responsive to both generator field flux and generator current which is then rectified and applied through suitable controls to the generator field.

3,702,966
CURRENT MEASURING AND AUTOMATICALLY RESETTABLE FAULT INDICATING MEANS

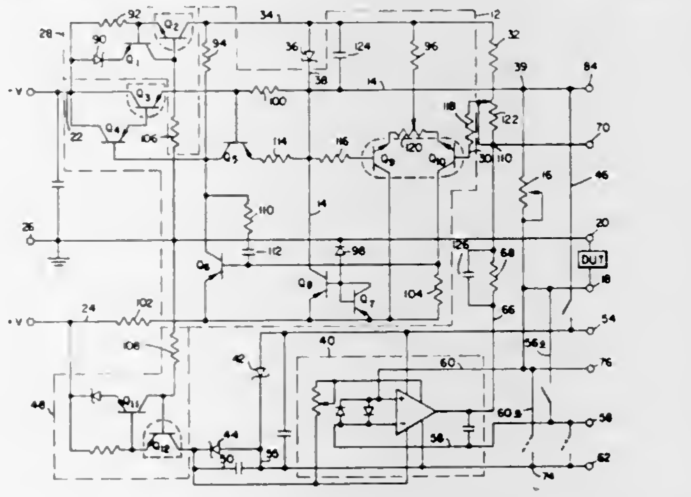
Edmund O. Schweitzer, Jr., Northbrook, Ill., assignor to E. O. Schweitzer Manufacturing Co., Inc., Mundelein, Ill.
Filed March 1, 1971, Ser. No. 119,639
Int. Cl. G01r *19/16, 31/02*
U.S. Cl. 324—133 **12 Claims**


DEMAGNETIZABLE LOW COERCIVE FORCE YOKE
BOOT
TO BE ENERGIZED AT 15 kv 60 Hz
STATIONARY
PIVOTABLE
CONDUCTIVE LAYER ON BODY OF FAULT INDICATOR

A capacitor is charged through a capacitive coupling to a high voltage alternating current electric power conductor and is discharged when the charge reaches a predetermined value to reset fault indicator that previously had been operated by flow of fault current in the conductor. The magnetic circuit employs a demagnetizable low coercive force core in the form of a bifurcated yoke or a ring having magnetizing windings energized on discharge of the capacitor. A manually resettable fault indicator employing a demagnetizing winding on a low coercive force ring also is disclosed.

3,702,967
ELECTRONIC TEST SYSTEM OPERABLE IN TWO MODES

James H. McPhail, Santa Clara, Calif., assignor to American Micro Systems, Inc., Santa Clara, Calif.
Filed May 10, 1971, Ser. No. 141,795
Int. Cl. G01r *27/00*
U.S. Cl. 324—158 D **19 Claims**

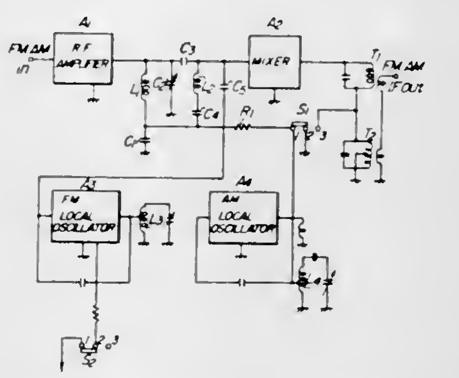


A parametric test system that will provide a forcing current at a predetermined level in one mode or a forcing voltage of a constant potential in another mode, particularly adapted for testing semiconductor devices. The circuit comprises a first amplifier means or voltage compliance amplifier which is an amplifier that produces the voltage compliance necessary for high voltage drive and measurement. The output of this compliance amplifier is controlled by a second amplifier means or control amplifier, both amplifiers being connected between

current sources operating at negative and positive voltage levels, and this output is connected to one of two test terminals adapted for connection to the junction of a device under test. The control amplifier is "floating" in that it is referenced to one test terminal so that in the current forcing mode it produces an output that keeps driving the compliance amplifier to a different voltage level which in turn increases current flow at the test terminals. When current through the test junction reaches the predetermined level, set by means of an adjustable resistor, the control amplifier provides the proper output and the system stabilizes, with the first amplifier means maintaining the compliance voltage required. For voltage forcing, an external power source supplies voltage via the control amplifier to one test terminal. As leakage current tries to flow through the junction of the device under test, the potential at the test terminals change and cause an imbalance at the inputs to the control amplifier which changes its output and keeps driving the compliance amplifier to a different voltage level, until it is sufficient to cause leakage current to flow through the device under test. A measuring resistor is provided in the output of the compliance amplifier to facilitate access to test values.

3,702,968
AM-FM RADIO RECEIVER HAVING NOVEL RF INPUT CIRCUIT

Hitoshi Sawairi, Hirakata; Yoshio Kurihara, Osaka; Kazuhiko Takahashi, Hirakata; Yoshihiko Hayakawa, Nishinomiya, and Yukio Hataya, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sept. 10, 1970, Ser. No. 71,081
Claims priority, application Japan, Sept. 17, 1969, 44/75026; Sept. 19, 1969, 44/76041; Sept. 20, 1969, 44/75559
Int. Cl. H04b *1/06*
U.S. Cl. 325—315 **7 Claims**

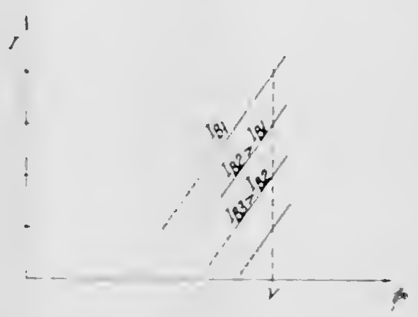


An AM-FM radio receiver comprises a high-frequency amplifying circuit for signals of both FM and AM frequency bands, signal transmission means including first and second signal channels which permit FM and AM high-frequency signals to pass therethrough respectively, and a frequency mixing circuit connected to the high-frequency amplifying circuit through the signal transmission means so as to receive an output signal of the high-frequency amplifying circuit selectively passing through the first and second signal channels in case of FM reception and AM reception respectively.

3,702,969
POWER SUPPLY CIRCUIT FOR CONTINUOUS-WAVE MAGNETRON

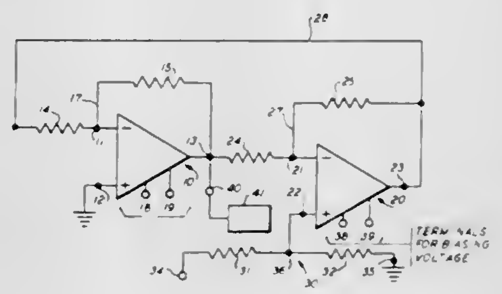
Jean Paul Maillot, Berthevin, France, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Sept. 10, 1971, Ser. No. 179,384
Claims priority, application France, Sept. 18, 1970, 7033903
Int. Cl. H01j *29/72*
U.S. Cl. 328—230 **7 Claims**

A power supply circuit for a continuous wave magnetron provides selectively adjustable microwave power levels that are stable at each level. The unregulated direct voltage supplied to the magnetron cathode is combined with an additional voltage derived from a common alternating current source to provide a total direct current which passes through the electromagnet coil of the magnetron. Variations in the power source are compensated by the variations of the added current in the coil to provide stable magnetron power at each level. The circuit providing the added current to the coil includes a simple rectifier, filter, zener diode and series resistor arrangement with a switch for selecting different diode, resistor and voltage combinations.



3,702,970
SYSTEM AND METHOD FOR DETERMINING THE MAXIMUM OUTPUT VOLTAGE SWING ON OPERATIONAL AMPLIFIERS

Grant F. Stetzler, Temple, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed Feb. 24, 1971, Ser. No. 118,409
Int. Cl. H03r *19/00*
U.S. Cl. 330—2 **4 Claims**

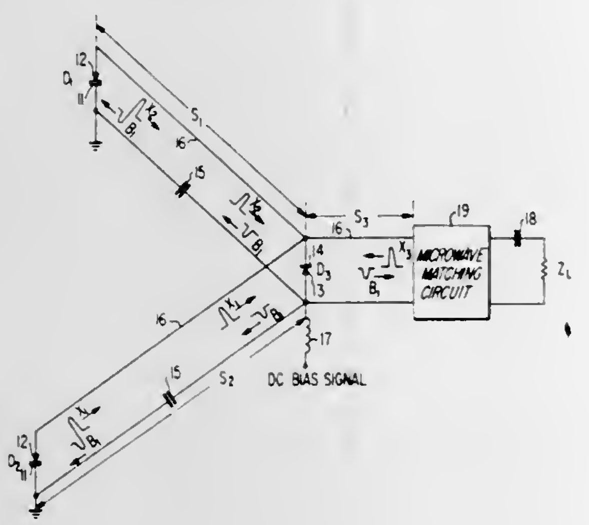


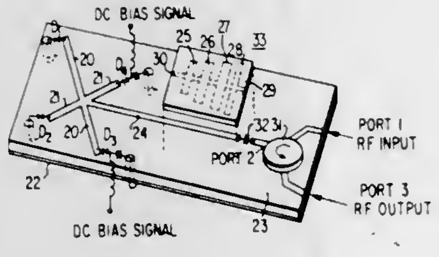
An operational amplifier is rapidly driven through a voltage swing to a maximum value; that is, the excursion of the output voltage attains a maximum value with a prescribed difference between the input and the output voltages. Initially, a voltage equal to the prescribed voltage is fed through an adder feedback circuit to the input of the amplifier and the resulting output voltage is added to the initial voltage to initiate a regenerative build up of the voltage applied to the input. The output voltage instantaneously increases until the prescribed difference exists between the input and the output voltages. A reading of this voltage indicates the maximum voltage swing at the prescribed difference between the input and output voltages.

3,702,971
BROADBAND MICROWAVE APPARATUS USING MULTIPLE AVALANCHE DIODES OPERATING IN THE ANOMALOUS MODE

Hiroshisa Kawamoto, Hightstown, N.J., and Elmer Lawrence Allen, Jr., Philadelphia, Pa., assignors to RCA Corporation
Filed Sept. 20, 1971, Ser. No. 181,715
Int. Cl. H03f *3/60*
U.S. Cl. 330—57 **6 Claims**

The electrodes of a first avalanche diode are shunt coupled to a microwave transmission line. The electrodes of at least two other avalanche diodes are also shunt coupled in opposite polarity to the microwave transmission line. The electrical separation between the diodes connected in opposite polarity and a broadband matching structure increase the bandwidth of operation of the avalanche diodes operating in the anomalous mode as an amplifier or oscillator when the diodes are reverse biased by an appropriate signal.



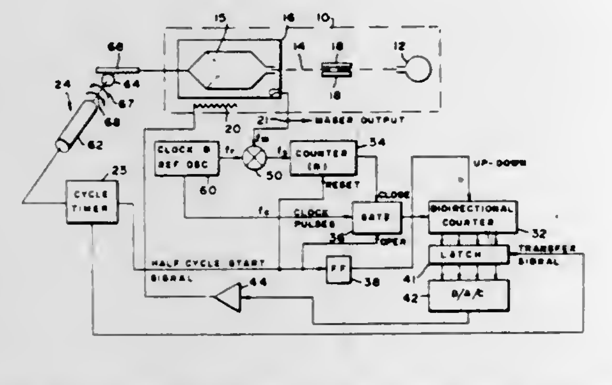


3,702,972

ATOMIC HYDROGEN MASER WITH BULB TEMPERATURE CONTROL TO REMOVE WALL SHIFT IN MASER OUTPUT FREQUENCY

James C. Fletcher (Administrator of the National Aeronautics and Space Administration with respect to an invention of); Robert F. C. Vessot, 334 Ocean Avenue, Marblehead, and Martin W. Levine, Big Rock Road, Manchester, both of Mass.

Filed Sept. 23, 1971, Ser. No. 182,978
Int. Cl. H01s *1/00*
U.S. Cl. 331—94 **10 Claims**



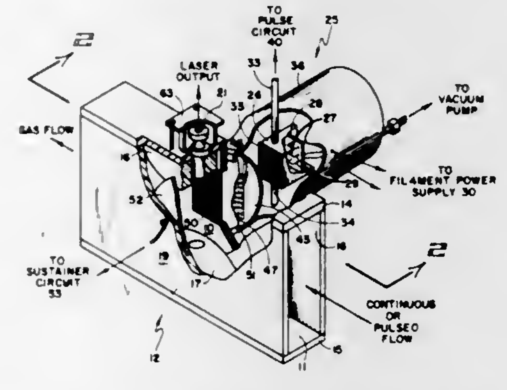
An atomic hydrogen maser is disclosed having automatic control of bulb temperature so as to eliminate the frequency shift due to collision of atomic hydrogen with the storage bulb walls. The storage bulb volume is changed by using a flexible bulb and the frequency of the output from the maser is measured for at least two different surface-to-volume configurations. The temperature of the bulb is maintained so that the output frequency is independent of the surface-to-volume ratio of the bulb and hence independent of atomic collision rate. The control process is done automatically by measuring the maser's output frequency over each half of a cycle where the bulb configuration is made to vary from minimum volume to maximum volume. An output frequency difference signal, measured during each cycle is used to control the bulb temperature, so that when the proper temperature is attained, a zero difference in frequency between operation at minimum volume and maximum volume is obtained.

3,702,973

LASER OR OZONE GENERATOR IN WHICH A BROAD ELECTRON BEAM WITH A SUSTAINER FIELD PRODUCE A LARGE AREA, UNIFORM DISCHARGE

Jack D. Daugherty, Winchester; Diarmaid H. Douglas-Hamilton, Boston; Richard M. Patrick, Winchester, and Evan R. Pugh, Lexington, all of Mass., assignors to Avco Corporation, Cincinnati, Ohio

Filed Sept. 17, 1970, Ser. No. 72,982
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 PE **29 Claims**



Apparatus for and a method of producing controlled discharges substantially throughout a large volume of a gaseous medium by generating in an enclosure a controlled density of free electrons in the medium and controlling the electron temperature of the free electrons to a level preventing a substantial increase in their density by a self-regenerative ionization process so that for a wide range of uniformity of both the density and temperature of the medium, a stable and controlled discharge is produced in the medium suitable for the intended use of the medium.

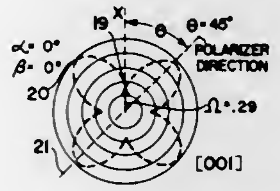
Apparatus for and the method of producing a discharge in accordance with the invention is useful for the production of lasting action, electrically conductive ionized gas for use in magnetohydrodynamic (MHD) devices and the like, or to produce or facilitate carrying out chemical processes such as, for example, the generation of ozone and the like.

3,702,974

REDUCTION OF THERMALLY INDUCED STRESS BIREFRINGENCE IN A SYNTHETIC CRYSTAL BY CONTROL OF GROWTH DIRECTION

Walter Koechner, Malibu; Dennis Keith Rice, West Los Angeles, and Larry Grant DeShazer, Los Angeles, all of Calif., assignors to Union Carbide Corporation

Filed Oct. 26, 1970, Ser. No. 83,983
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 T **5 Claims**



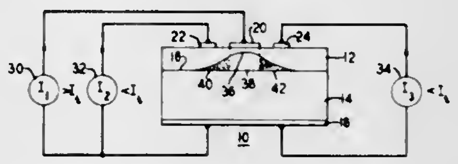
Thermally induced stress birefringence in a synthetic laser rod crystal can be minimized in certain portions of the crystal by growing the crystal in a specified direction. This direction is the [001] or equivalent direction as contrasted to the conventional [111] growth direction. Utilizing such a crystal in a laser system having a polarizing means in the optical cavity enables power losses in the polarized laser light to be minimized by orienting the direction of polarization to intercept those portions of the crystal exhibiting minimum birefringence.

3,702,975

LOW THRESHOLD STRIPE GEOMETRY INJECTION LASER

Stewart Edward Miller, Middletown Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 9, 1970, Ser. No. 96,530
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 H **1 Claim**



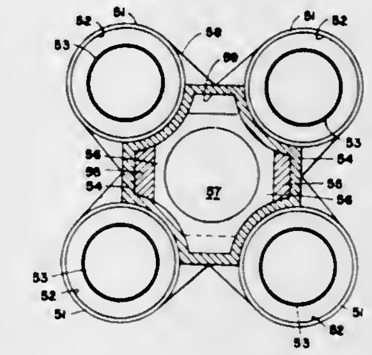
The threshold current density is reduced in a stripe geometry injection laser which includes at least one additional control stripe contact parallel to and spaced from the stripe contact normally utilized to produce lasing. The current applied to the control stripe is maintained below that required for lasing, thereby reducing the optical loss in the region under the control stripe. Since the optical field normally penetrates into this region, the total loss of the laser as a whole is reduced resulting in a lower threshold for lasing. Embodiments utilizing a control stripe on both sides of the active stripe are also described.

3,702,976

ALL GLASS PERIPHERALLY MULTI-ARCUATE DISC LASER

Charles G. Young, Storrs, Conn., assignor to American Optical Corporation, Southbridge, Mass.

Continuation-in-part of Ser. No. 20,946, March 19, 1970. This application Nov. 11, 1971, Ser. No. 197,893
Int. Cl. H01s *3/06*
U.S. Cl. 331—94.5 **7 Claims**



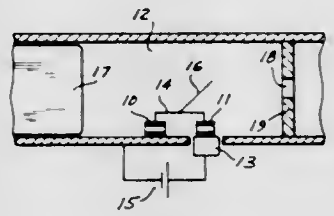
A rectangular-disc laser structure of all-glass support construction. A segmented neodymium-doped glass laser rod is supported in a glass tubing and is designed to permit fluid coolant flow within the tubing and amongst the rod segments. The non-laserable glass supporting means consists of samarium-doped cladding glass to reduce interference by "off axis" spontaneously emitted light. The fluid coolant has an index of refraction which matches that of the laser glass to achieve a high efficiency. The absence of metallic supporting means minimizes the chance of metallic decomposition under the influence of pump light. A peripherally multi-arcuate laser structure utilizing a four-flashtube closewrap is disclosed where part of each flashtube water jacket surface mates with one of the multi-arcuate tubing surfaces.

3,702,977

DEVICE FOR GENERATING MICROWAVE OSCILLATIONS

Kjell Olow Ingemar Olsson, 4, Stravagen, 17500 Jakobsberg, Sweden

Filed Oct. 28, 1971, Ser. No. 193,444
Int. Cl. H03b *7/06*
U.S. Cl. 331—107 R **13 Claims**



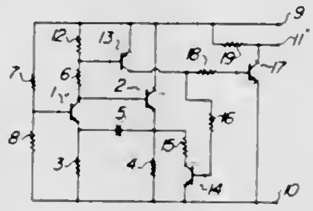
A microwave oscillator including two semiconductor devices of a kind which can be switched between two state or which becomes unstable or exhibits negative resistance under the effect of an external electric field exceeding a given threshold value. The two semiconductor devices are mounted within a microwave resonant cavity and are connected in series between the poles of a dc bias voltage source. The common junction point between the semiconductor devices is accoupled to the microwave cavity so that the semiconductor devices are driven in push-pull by the ac microwave voltages derived from the microwave cavity and superimposed upon the dc bias voltages from the voltage source. The semiconductor devices may be Gunn-diodes or avalanche diodes. The microwave resonator cavity may consist of a waveguide section provided with tuning devices or a coaxial cavity closed at one end by an end wall.

3,702,978

ASTABLE MULTI-VIBRATOR

Shuzo Wakai, 1-2, Koaza Kubo, Oaza Shoryuji, Nagaokacho, Otokuni-gun, Kyoto, Japan

Filed May 17, 1971, Ser. No. 143,992
Claims priority, application Japan, May 20, 1970, 45/43647
Int. Cl. H03k *3/282*
U.S. Cl. 331—113 R **3 Claims**



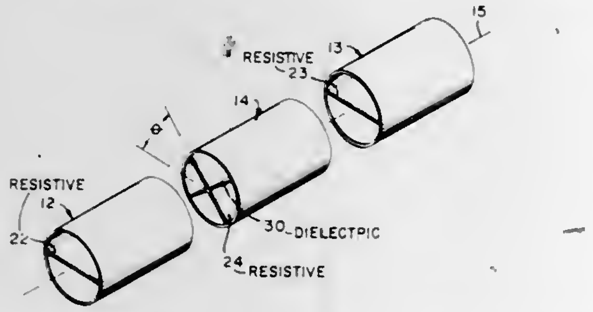
An astable multi-vibrator employed in a vertical oscillator requiring a short duty cycle. It comprises two main transistors, one of which has the emitter connected to a resistor, which is in turn shunted by a resistance lower than its resistance during a period constituting the duty cycle, whereby the duty cycle may be reduced without increasing power consumption.

3,702,979

ROTARY VANE ATTENUATOR WHEREIN ROTOR HAS ORTHOGONALLY DISPOSED RESISTIVE AND DIELECTRIC CARDS

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Charles T. Stelzried, La Crescenta; Tom Y. Otoshi, La Canada; David L. Nixon, Arcadia, all of Calif., and Robert W. Beatty, Boulder, Colo.

Filed Oct. 29, 1971, Ser. No. 193,947
Int. Cl. H01p *1/22*
U.S. Cl. 333—81 B **4 Claims**



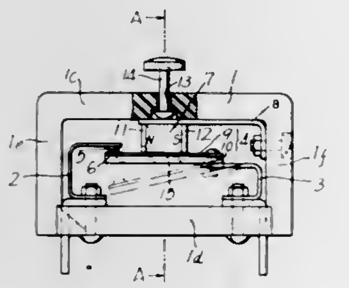
A rotary vane attenuator is described, comprising two stators and an intermediary rotor, each with a resistive card. The rotor, in addition to the resistive card, includes an orthogonally disposed card of dielectric material which has no resistive film thereon.

3,702,980

CIRCUIT BREAKER

Yasuo Kasahara, Tokyo, Japan, assignor to Kabushikikaisha Nakatani, Tokyo, Japan, a part interest

Filed June 2, 1971, Ser. No. 149,167
Int. Cl. H01h *77/10*
U.S. Cl. 335—16 **10 Claims**



A permanent magnet and a conductor of magnetic material which is attracted by the magnet are arranged in biased relationship to each other so as to move away from each other. Current flow occurs through the conductor in substantial alignment with the direction of that portion of magnetic flux emanating from the magnet that passes through the conductor. When the current has a great magnitude such as short circuit current, the magnet and the conductor are pulled apart. The resulting movement of the conductor is effective to interrupt the current path. At least one pole of the magnet is attached with a magnetizable member for increasing the speed of interruption.

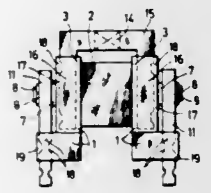
3,702,981

ELECTROMAGNETIC RELAY

Klaus-Dieter Wahnschaffe, 3150 Peine/Hann., Saarlandring 19 D, Germany

Filed July 27, 1971, Ser. No. 166,518
Claims priority, application Germany, July 31, 1970, P 20 38 236.9
Int. Cl. H01h
U.S. Cl. 335—133 **8 Claims**

An electromagnetic relay has a winding form, of plastic composition material, carrying the entire relay assembly, has an armature movably supported in the winding form, and has at least one set of contact springs supported on the winding form and including plural contact springs and resilient cooperating contacts electrically isolated from each other by dielectric material. The contact springs and the cooperating contacts are formed with cutouts in the area of the dielectric material, and the relay further includes a magnet yoke. The coil form has flanges at both ends, and the flanges are formed with slots which are symmetrical and parallel to the longitudinal center line of the armature and perpendicular to the length of the winding form, these slots being defined, in part, by lamellae of plastic composition material. The contact springs, resilient contacts, relay winding terminals and legs of the magnet yoke are mounted in the slots and locked in position by deformation of the plastic composition material into the cutouts, such deformation being effected by melting and flowing of the plastic composition material. The melting and flowing of the plastic composition material may be effected ultrasonically.

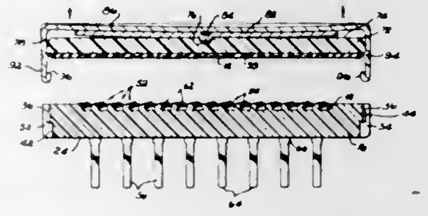


3,702,982

FLAT CABLE CONNECTOR

Joseph Francis Kelly, and Harold James Prow, Jr., both of Phoenix, Ariz., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 8, 1971, Ser. No. 113,325
Int. Cl. H01r *7/04*
U.S. Cl. 339—99 R **10 Claims**



An electrical connector member having an insulated flat cable having conductors embedded therein. The electrical contacts have insulation piercing portions formed thereon with the contacts mounted in an insulator member. The contacts are connected to the flat cable conductors by the piercing portions which penetrate the cable insulation when a clip is secured to the insulator. A cover member may be interposed between the clip and the flat cable for positioning the cable in the connector. Also, a spring member allows the cover member and insulator member to be securely held together.

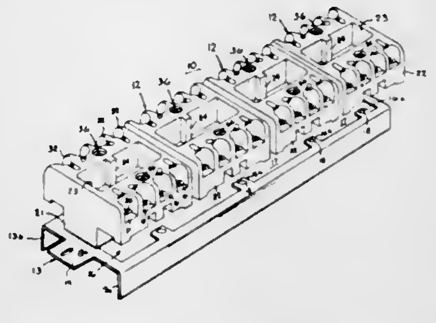
3,702,983

BACK WIRED MOUNTING SYSTEM FOR STATIC CONTROL

Richard L. Chace, Bloomington, and Burton O. Haun, Normal, both of Ill., assignors to General Electric Company

Filed June 11, 1971, Ser. No. 152,222
Int. Cl. H01r *13/12*
U.S. Cl. 339—33 **10 Claims**

A back wired static control system including one or more base receptacles supported on a mounting rail, the base receptacle having one or more wire wrap terminals each comprising a wire wrap pin secured to a terminal nut and terminal, the wire wrap terminal being positioned on the base receptacle such that the wire wrap pin extends through an opening provided therefor in the base receptacle, and the wire wrap pin protruding through to the rear of the base receptacle and mounting track such as to be easily accessible for making suitable connection thereto when the base receptacle is assembled to the mounting rail so as to be supported thereby.

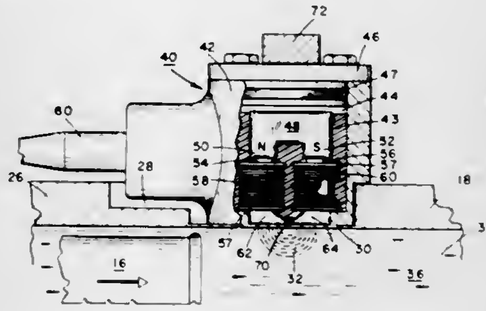


3,702,984

UNDERWATER CARTRIDGE DETECTOR

John C. Mollere, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.

Filed Feb. 16, 1971, Ser. No. 115,451
Int. Cl. H04r *13/00*
U.S. Cl. 340—8 R **5 Claims**



This invention generally relates to known marine seismic prospecting systems employing one or more guns for consecutively firing explosive cartridges underwater. Seismic records are produced in synchronism with the firing of the gun. The cartridges are launched from a cartridge loader positioned on the deck of the seismic vessel into the gun through a flexible hose transporting a stream of water flowing under pressure.

The improved system of this invention employs a reluctance-type pickup detector which is completely sealed and which can withstand high-explosive pressures at close range. A permanent magnet in the detector provides a magnetic flux. The detector is mounted inside a recess in the barrel of the gun to allow the flux path to penetrate into the stream of water flowing through the barrel. The passage of the cartridge through the gap opposite to the recess changes the magnetic flux and generates a strong electric pulse which is transmitted to the recording equipment on the deck of the seismic vessel.

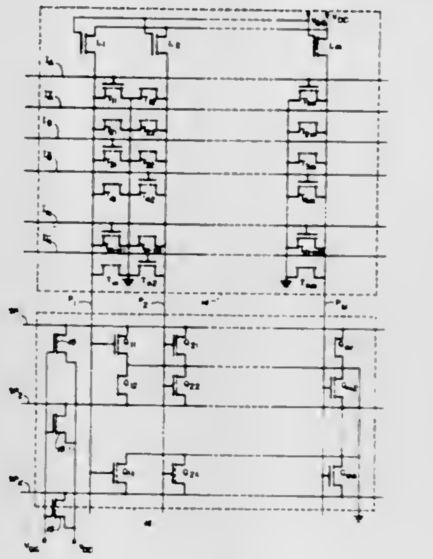
3,702,985

MOS TRANSISTOR INTEGRATED MATRIX

Robert J. Proebsting, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed April 30, 1969, Ser. No. 820,535
Int. Cl. H04q *3/00*
U.S. Cl. 340—166 R **8 Claims**

A mass production large scale integrated logic circuit formed on a single substrate which can be custom programmed by modification of a single fabrication mask to perform random logic is disclosed. The circuit includes a first programmable matrix of voltage controlled devices for generating product terms from its inputs and a second programmable matrix of voltage controlled devices for summing the product terms so that a large number of inputs can be accepted while reducing the number of voltage control devices required in a manner that provides practical realization in semiconductor integrated circuit form and is suitable for a wide range of custom applications.

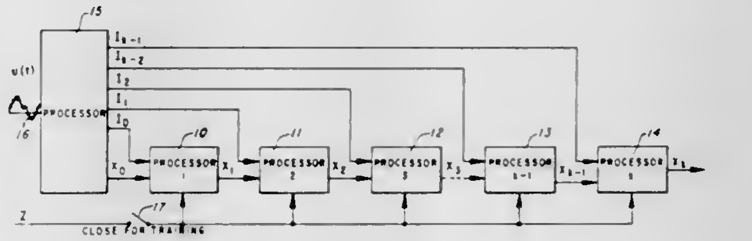


3,702,986

TRAINABLE ENTROPY SYSTEM

Fredrick James Taylor, Richardson, and William C. Choate, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed July 6, 1970, Ser. No. 52,611
Int. Cl. G06f *15/18*
U.S. Cl. 340—172.5 **26 Claims**



A system is comprised of a series of trainable nonlinear processors in cascade. The processors are trained in sequence as follows. In a first phase of the sequence, a set of input signals comprising input information upon which the system is to be trained and a corresponding set of desired responses to these input signals are introduced into the first processor. When the first processor has been trained over the entire set, a second phase commences in which a second set of input signals along with the output of the first processor and corresponding set of desired responses are introduced into the second processor. During this second phase the input signals to the first and second processors are in sequential correspondence. In one embodiment of the invention the set of input signals to the first processor comprises the same set of input signals being introduced into the second processor delayed by a fixed time interval.

The training sequence continues until all processors in the series have been trained in a similar manner. The input to the k^{th} or last processor will comprise a set of input signals, the desired output responses to those input signals and the output of the $(k-1)^{th}$ processor. The input to each preceding processor will th separate sets of input signals which in one embodiment are the set of input signals to the k^{th} processor, retrogressively, delayed in time by one additional time interval and the output of the previous processor. The system may be looked upon as a minimum entropy system in which the entropy or measure of uncertainty is decreased at each stage. When all of the processors have been trained, the system is ready for execution and the actual output of the last stage is a minimum entropy approximation of a proper desired output when an input signal, without a corresponding desired response, is introduced into the completed system of cascaded processors.

3,702,987

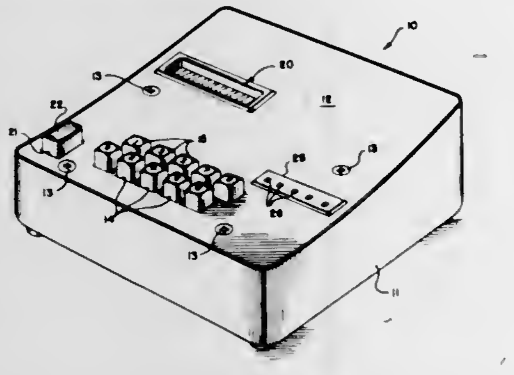
INFORMATION VERIFICATION SYSTEM AND DIGITAL DATA INPUT UNIT

Robert H. Twyford, Falls Church, Va., assignor to Ultronic Systems Corp.

Division of Ser. No. 721,543, March 15, 1968, Pat. No. 3,569,624. This application July 24, 1970, Ser. No. 64,862

Int. Cl. G06f *3/04, 15/30*

U.S. Cl. 340—172.5 **7 Claims**



A system incorporating the storage of information and the capacity of retrieval from such storage of selected information data. Typically, the system is used for verification of acceptable credit account ratings for customers of a credit accepting merchandising operation. The system uses digital computer techniques in which coded signals from any one of a plurality of inquiry units can act as a command on the formation storage unit to search and report back to the requesting inquiry unit the presence or absence of informative data in the storage unit corresponding to that requested to be checked by the inquiry unit.

3,702,988

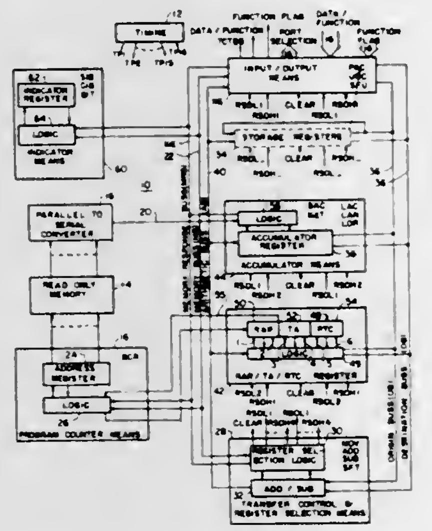
DIGITAL PROCESSOR

Ralph D. Haney; James E. Zachar, both of Dayton, and Charles J. Drozd, Centerville, all of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Sept. 14, 1970, Ser. No. 72,084

Int. Cl. G06f *7/48*

U.S. Cl. 340—172.5 **31 Claims**



A digital processor built entirely of metal-oxide semiconductor devices constructed on integrated circuits by large-scale integration techniques is shown. The processor includes a read-only memory means which provides a series of coded instruction signals in a serial-by-bit manner to a memory buss line. A plurality of logic circuits is coupled to the memory buss line, and each responds to selected ones of the instruction signals to perform a certain operation. There is also provided a plurality of registers which can be used in processing information.

3,702,989

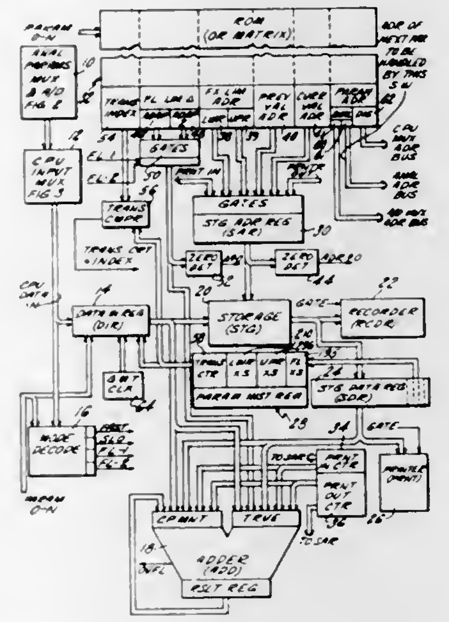
SELECTIVE DATA HANDLING APPARATUS

James Provenzano, Jr., Winsted; John Saunders, East Hartford, and Henry Monterose, Wapping, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Continuation of Ser. No. 803,372, Feb. 28, 1969, abandoned. This application March 12, 1971, Ser. No. 123,854

Int. Cl. G11b *27/00*

U.S. Cl. 340—172.5 **18 Claims**



Raw data relating to a variety of parameters is analyzed to determine whether or not the current value or condition of the parameter is significant according to schedules of criteria which are subject to change. Criteria selection is adaptive, being dependent upon modes or conditions indicated by the parameter values being handled by the apparatus. Additionally, certain criteria may have floating limits, so that the base from which deviation is measured for the purpose of determining significance is adjusted whenever a significant condition (deviation from a base by more than a permissible amount) occurs. Additionally, fixed limits are provided, particularly for parameters of the type that can result in a dangerous condition whenever the value of the parameter exceeds certain upper or lower limits. A given parameter may be tested for both floating limit and fixed limit conformance, and provision is made to take similar as well as different action in dependence upon exceeding the different types of limits. Provision is made to transmit the data, in this embodiment to record it for further analysis at a later date, in dependence upon exceeding a fixed limit a number of times more than a number setable to indicate probable successive number of transients. Exceeding a fixed limit results in printing an identification of the parameter which exceeded a fixed limit together with Greenwich Mean Time at the time of occurrence and an indication of whether an upper or lower limit was exceeded. Thereafter, that parameter will not cause printing until such time as the parameter value again falls within fixed limits.

The disclosure embodiment utilizes standard data processing components in a relatively simple data flow arrangement, will control provided by a parameter identification decode in a read only memory (hereinafter referred to as ROM) or large decoding matrix. The ROM provides for each given parameter: a transient index indicative of the number of probable transients, thereby to be ignored; floating limit deviations (referred to symbolically herein as deltas) for a plurality of modes, the correct one being selected in dependence upon a given mode of operation; the addresses of both upper and lower fixed limits for the given parameter; the address in storage of the previous value used as a base for floating limits; the address of current values in storage which permits storing the present value of the parameter until it can be determined, at the end of a scan of all parameters, whether or not these parameters are to be recorded; and the addresses of the transducers or sensors — that is the actual input equipment — with which the parameter is related. Any parameter can have more than one parameter identifying number, so that polling of parameters can include more frequent polling of certain key parameters interspersed with sequential polling of all parameters, simply by providing the same connections for additional parameter numbers as may be provided for the basic parameter number for a given parameter. Progression of logical sequence and control is provided simply by a parameter counter which counts successively for each parameter analysis period, thereby polling the various parameter numbers in sequence, together with a program counter which identifies four different function periods, each subdivided into eight times, there being clock signals to identify first and second halves of each of the clock times. Provision is made to utilize main storage as a printer buffer storage as well as a one-scan recorder buffer storage.

3,702,990

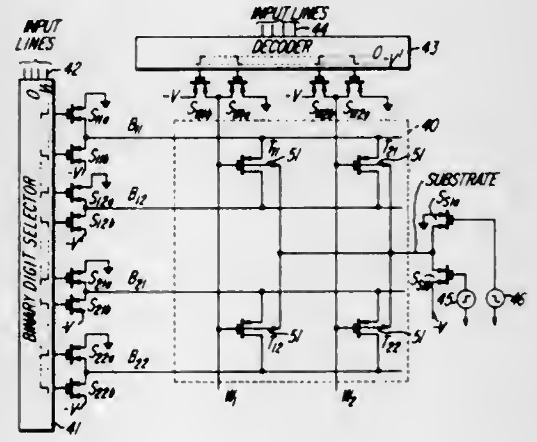
VARIABLE THRESHOLD MEMORY SYSTEM USING MINIMUM AMPLITUDE SIGNALS

Edward Charles Ross, Hightstown, N.J., assignor to RCA Corporation

Filed Feb. 2, 1971, Ser. No. 111,875

Int. Cl. G11c *11/40;* **H03k** *3/29*

U.S. Cl. 340—173 R **9 Claims**



Selected devices of an MNOS array are placed in one threshold state by placing their gate electrodes at a first voltage level and their source and drain electrodes and their semiconductor substrate at a second voltage level. Selected devices are placed in a second threshold state by reversing the above mentioned voltage conditions. In both instances, appropriate voltages are applied to the non-selected devices to prevent them from changing their states. The substrate can be switched to assume various voltage levels.

3,702,991

MAGNETIC DOMAIN MEMORY STRUCTURE

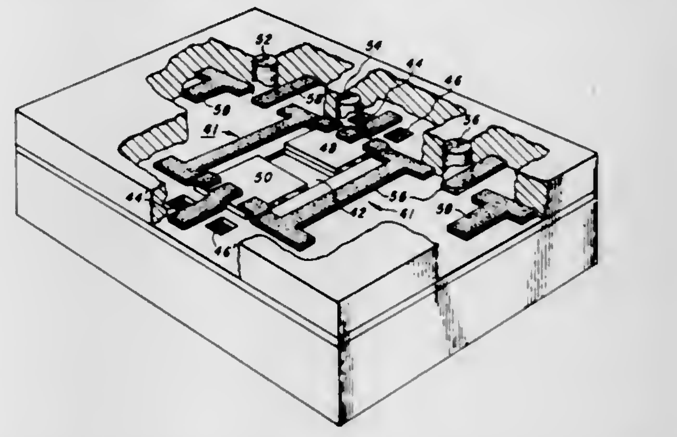
Robert Thomas Bate, Richardson, and Forrest Gerome West, Jr., Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed March 30, 1971, Ser. No. 129,423

Int. Cl. G11c *11/14, 19/00*

U.S. Cl. 340—174 TF **11 Claims**

A magnetic memory structure is disclosed that includes a plurality of insulated gate field effect transistors (IGFET's) on one surface of a semiconductor substrate. A predetermined pattern of propagating material overlies the IGFET devices,



and a layer of magnetic material capable of supporting cylindrical magnetic domains is mechanically attached to the structure to overlie the propagating material.

3,702,992

LARGE CAPACITY FERROMAGNETIC THIN FILM MEMORY DEVICE

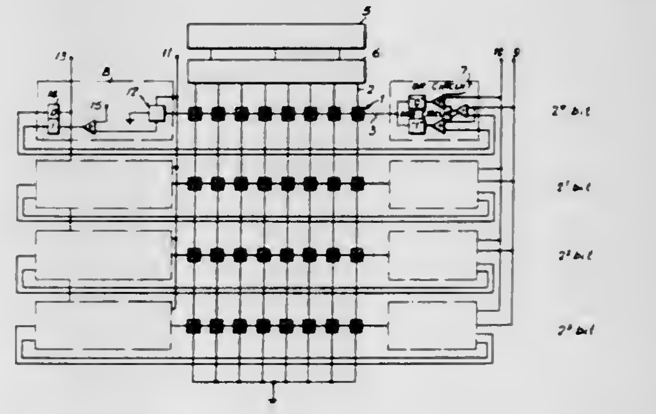
Masaaki Sakai, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 586,167, Oct. 12, 1966, abandoned. This application May 20, 1970, Ser. No. 39,166

Claims priority, application Japan, Oct. 14, 1965, 40/63108

Int. Cl. G11c *11/14*

U.S. Cl. 340—174 TF **5 Claims**



Driving currents supplied to the current driving conductors in the hard magnetization direction axis and the easy magnetization direction axis of a thin film magnetic memory device are selected to prevent inversion of the magnetization when driving current is supplied to only one of the conductors and to permit inversion of the magnetization only when driving current is supplied simultaneously to both conductors. Readout is provided when driving current is simultaneously supplied to both conductors and writein is provided when driving current is supplied to one of the conductors independent of the writein information and driving current is supplied to the other of the conductors dependent upon writein information.

3,702,993

STORAGE DEVICE

Hans Wilhelm Neuhaus, Harksheide, and Jan Verweel, Hamburg, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

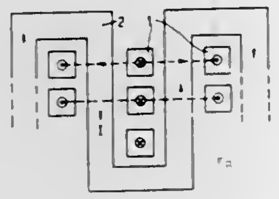
Filed Dec. 9, 1970, Ser. No. 96,300

Claims priority, application Germany, Dec. 10, 1969, P 19 61 887.2

Int. Cl. G11c *11/14*

U.S. Cl. 340—174 YC **10 Claims**

In stores using a thin magnetic film the coercivity of which is highly temperature-dependent, in order to write an information an area is heated by an electron beam or a laser beam to a temperature such (for example, a temperature above the Curie-temperature) as to enable the magnetisation in the relavant area to be adjusted to an externally generated magnetic field. This magnetic field is not generated in known manner by a coil at the edge of the store, but by a printed wire which traces a tortuous path between the discrete areas. Owing to

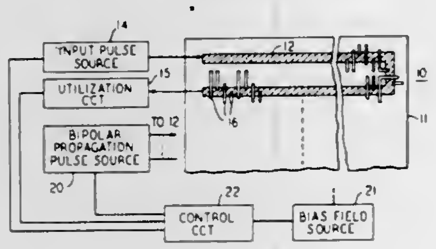


the small distance between the printed wire and each storage area a smaller magnetic field is required and the inductance of this printed wire is lower than that of a coil arranged at the edge, permitting the magnetic field to be switched considerably more readily and rapidly for writing. The use of a beam splitter permits the production of a word-organized store of large capacity.

3,702,994
DOMAIN PROPAGATION ARRANGEMENT

Donald Eugene Kish, North Plainfield, and James Lanson Smith, Bedminster, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed March 1, 1971, Ser. No. 119,492
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF 9 Claims



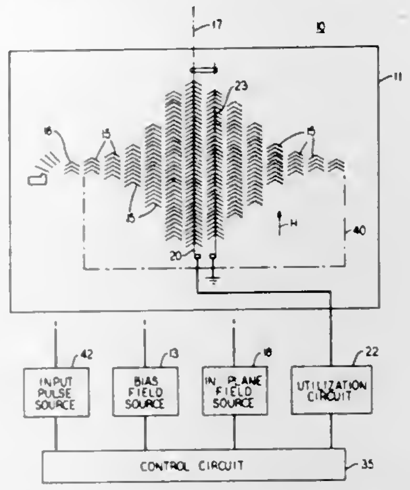
The displacement of single wall domains in a domain propagation medium is achieved along a straight line conductor to which bipolar pulses are applied. Discrete magnetically soft elements are disposed to respond to the in-plane components of the fields generated by the pulses to produce consecutively offset poles to displace the domain in the desired direction.

3,702,995
SINGLE WALL DOMAIN ARRANGEMENT

Andrew Henry Bobeck, Chatham; Frank John Ciak, Roselle Park, and Walter Strauss, Summit, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 24, 1971, Ser. No. 201,755
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 EB 13 Claims

A single wall domain arrangement comprises channels which are defined in a layer of magnetic material by patterns of magnetically soft elements along which domains move responsive to a magnetic field reorienting in the plane of the

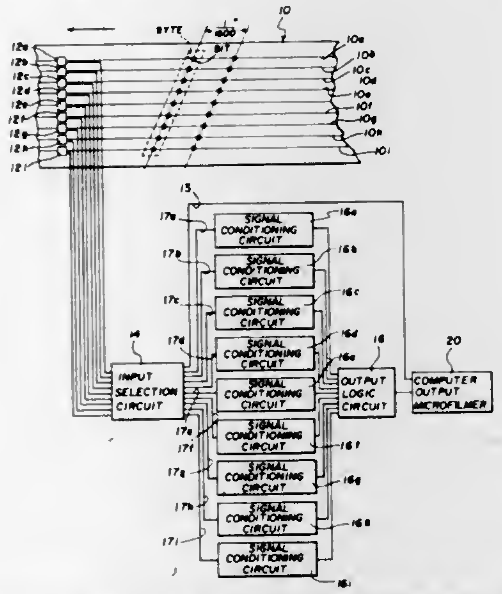


layer. The elements are formed by a single photoresist process resulting in the simultaneous formation of a compatible magnetoresistance detector.

3,702,996
ADAPTIVE SYNCHRONIZING APPARATUS FOR HANDLING PHASE ENCODED BINARY INFORMATION

Allan J. Wolfer, La Jolla, and Edward Cooper, San Diego, both of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 27, 1971, Ser. No. 192,861
Int. Cl. G11b *5/44*
U.S. Cl. 340—174.1 H 8 Claims

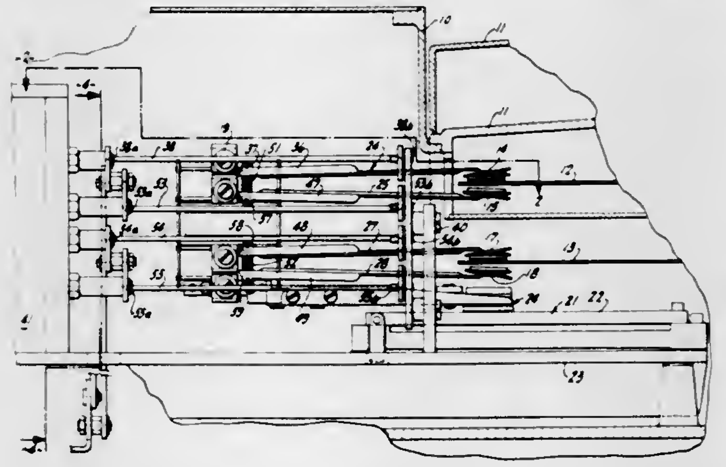


Apparatus for decoding from binary phase encoded information from a plurality of tracks recorded on a suitable information storage medium such as a magnetic tape. Each track of recorded binary information includes a preamble and an information bearing portion (or block of information). The preamble is a set of predetermined signals which is used to synchronize the operation of the apparatus with the decoding data rate of the recorded information in order to sample or gate the signals of the information bearing portions. Typically, bits of information recorded in each of the tracks are sampled at varying instances independently of the other tracks to generate simultaneously a particular group of byte of information bits; this is accomplished by storing bits of information from each of the tracks and then simultaneously reading out the byte of information. This apparatus operates to: (1) sense a start of data signal indicative of the beginning of the block of information of each track; (2) sense a manifestation that the decoding operation of the apparatus is synchronized with the data rate of the preamble portion, and; (3) thereafter maintain synchronization by the adjusting the operation of the apparatus as a function of the decoding data rate of the information bearing portion.

3,702,997
HEAD LOADING SYSTEM FOR MAGNETIC MEMORY DISK DRIVES

John W. Jamieson, San Leandro, Calif., assignor to Diablo Systems, Inc., Hayward, Calif.

Filed Nov. 15, 1971, Ser. No. 198,695
Int. Cl. G11b *5/60, 21/12*
U.S. Cl. 340—174.1 E 5 Claims

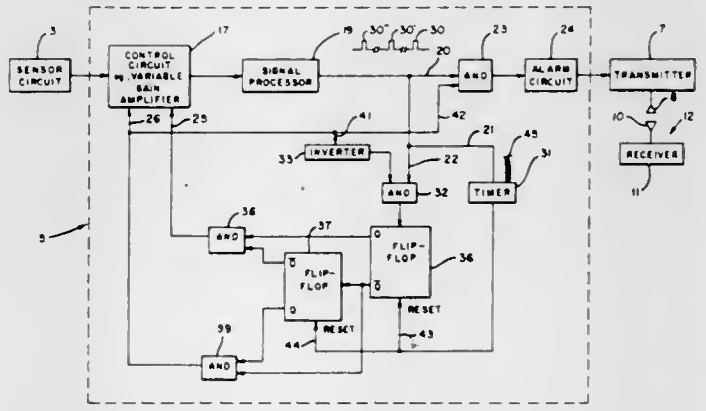


A head loading system for a disk drive where levers extend from the support fingers of each of the read/write heads which are coupled to a radially movable carriage. The levers are capable of being contacted with rotatable bails at any position of the head to control the "flying" or loading and raising of the heads. An electromagnet rotates the bails for loading. A return spring acts as fail-safe means in case of power failure to raise the heads from a memory disk at any tracking position. The lever-bail arrangement reduces the mass of the carriage.

3,702,998
METHOD AND APPARATUS FOR OPERATING A SINGLE SENSOR TO HAVE THE PROPERTIES OF AN ARRAY OF SENSORS

Raymond David Lucas, Sunnyvale, Calif., assignor to GTE Sylvania Incorporated

Filed March 3, 1970, Ser. No. 16,035
Int. Cl. G08b *13/00*
U.S. Cl. 340—258 R 17 Claims

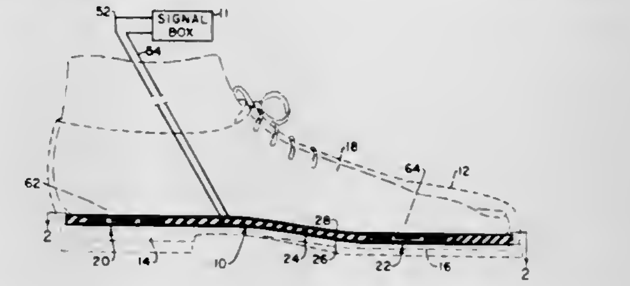


Seismic signals in the area of detection associated with a single geophone sensor are received by the sensor, amplified in a variable gain amplifier, and analyzed by a processor to determine whether they are produced by an intruder moving in the detection area. The output of the processor is applied to logic circuitry which automatically decreases the amplifier gain, and thus the size of the detection area, when the received signal is produced by an intruder. If the processor produces outputs indicating intrusion of the detection area for a prescribed number of successively smaller areas of detection within a predetermined time interval, logic circuitry produces an alarm signal indicating that an intruder is in a detection area.

3,702,999
PARTIAL WEIGHT BEAR WARNING DEVICE

Ivan A. Gradisar, 3629 Greenwich Road, Barberton, Ohio

Filed Feb. 22, 1971, Ser. No. 117,509
Int. Cl. G08b *13/10*
U.S. Cl. 340—272 21 Claims

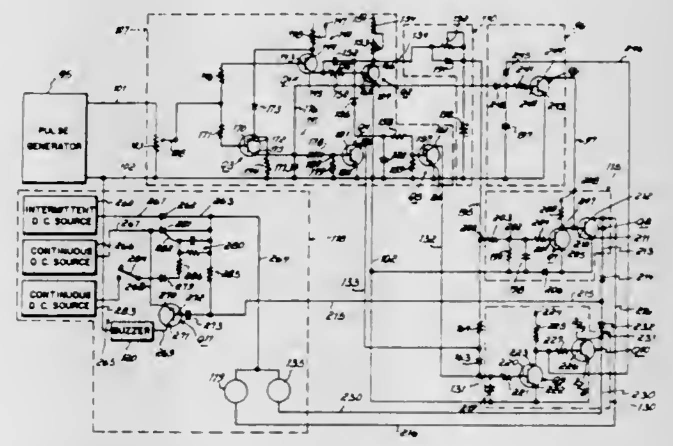


A device for warning a patient when he exceeds a predetermined amount of weight on his foot during locomotion comprising two force-sensitive electrical contactors disposed one each in predetermined positions beneath the heel and ball of the foot. The contactors are secured in a thin pad shaped to conform to the bottom of the shoe or footwear of the patient. Each electrical contactor includes a pair of flat circular metal plates separated by a resilient member and connected to a battery-powered alarm.

3,703,000
SECURITY ALARM SYSTEM

Martin Kaplan, Westport; Donald E. Hansen, Brookfield Center, and Eric G. Quist, Roxbury, all of Conn., assignors to Mosler Research Products, Inc., Danbury, Conn.

Division of Ser. No. 580,992, Sept. 21, 1966, Pat. No. 3,553,730. This application April 13, 1970, Ser. No. 32,488
Int. Cl. G08b *13/22*
U.S. Cl. 340—276 2 Claims



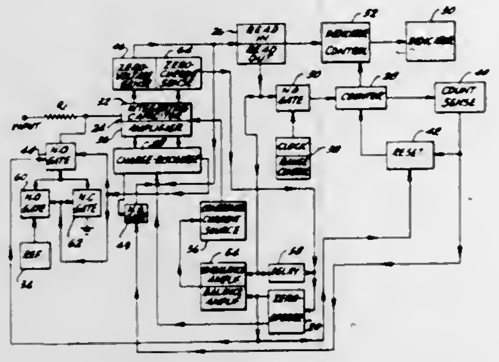
Discriminator for actuating an alarm indicator in response to pulses having peak and base amplitudes deviating from predetermined levels. An input is fed to the bases of a first and a second transistor, one of said transistors being biased to switch at an upper limit and the other transistor being biased to switch at a lower correlated with the forward bias potential difference across a diode connected between the emitters of said transistors. An alarm indicator is connected to each collector of said transistor to indicate that the base of a received pulse does not fall between said upper and lower limits.

3,703,001
ANALOG TO DIGITAL CONVERTER

Eugene B. Hibbs, Jr., 135 N. Verdugo Road, Glendale, Calif.

Filed May 22, 1969, Ser. No. 826,897
Int. Cl. H03k *13/20*
U.S. Cl. 340—347 NT 11 Claims

An analog to digital converter of the dual slope integrating type in which the integrating capacitor of an integrator is in a full wave bridge circuit during a first integration period so that the unknown input voltage applied directly to the integrator may be either positive, negative or alternating without affecting the direction of charge of the capacitor. During a discharge period, the capacitor is connected for discharge when a reference voltage is applied to the input of the integrator. Before each measurement, the operational amplifier of the integrator is automatically rebalanced. High and low clock frequencies with a 10 to 1 ratio are provided and are selectively applied to the counter during the charge and discharge periods to provide different ranges for the converter, range being automatically changed as necessary.



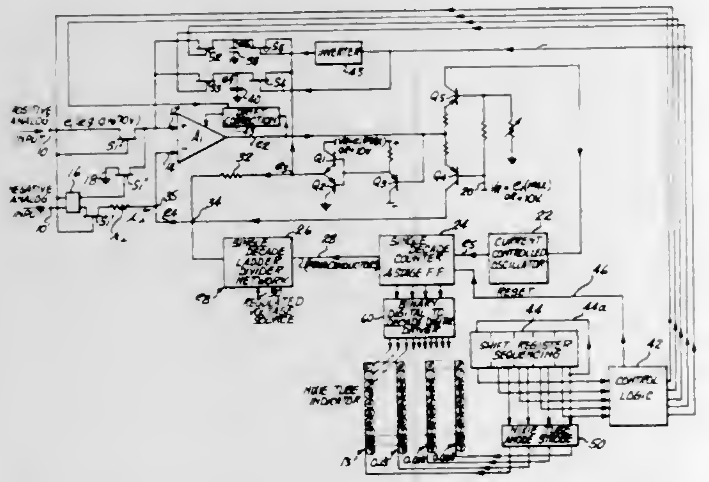
3,703,002
ANALOG TO DIGITAL CONVERTER AND INDICATOR USING RECIRCULATION OF REMAINDER

Richard W. Van Saun, Edmonds, Wash., assignor to John Fluke Mfg. Co., Inc.

Continuation of Ser. No. 841,414, July 14, 1969, abandoned. This application Dec. 6, 1971, Ser. No. 205,425

Int. Cl. H03k *13/06*

U.S. Cl. 340—347 AD **17 Claims**



A multi-digit analog to digital converter with digitizing means in the output of a differential amplifier to derive the digit value and also feedback applied to the amplifier input in nullifying balancing relation to an analog input signal, such feedback including a component proportional to the derived digit value of the analog input and a component proportional to the resultant arithmetic remainder of such digit value, said digitizing means further storing a recirculatable remainder in analog form proportional to said remainder component multiplied by the digit base, said remainder being substituted for the input analog signal at the end of each digitizing time period in order to operate the digitizing means similarly in the next succeeding digit-deriving cycle, such process being repeated until the analog signal conversion has been carried out to a predetermined number of digit places. The digitizing means comprises a digit base ratio divider connected in feedback relation to the amplifier input, including a counter-controlled ladder network and a feedback resistance, with said ladder network being digitally switched in response to the count of a signal controlled variable frequency oscillator operated, in turn, proportionally to amplifier output exceeding a reference, voltage proportional to the digit base, and with the recirculatable remainder analog feedback being derived in either of two condensers alternately during succeeding digitizing time periods proportionally to amplifier output limited at an upper value proportional to the digit base. Additional feedback means responsive to amplifier output exceeding a value proportional to the digit base supresses amplifier output during digitizing periods. Depending upon input and feedback connections the amplifier may be operated in a straight mode or in an operational mode for positive or negative polarity input signals and avoid common mode rejection errors. Virtual grounding of both differential input sides of the amplifier cyclically enables correction of differential gain drift errors.

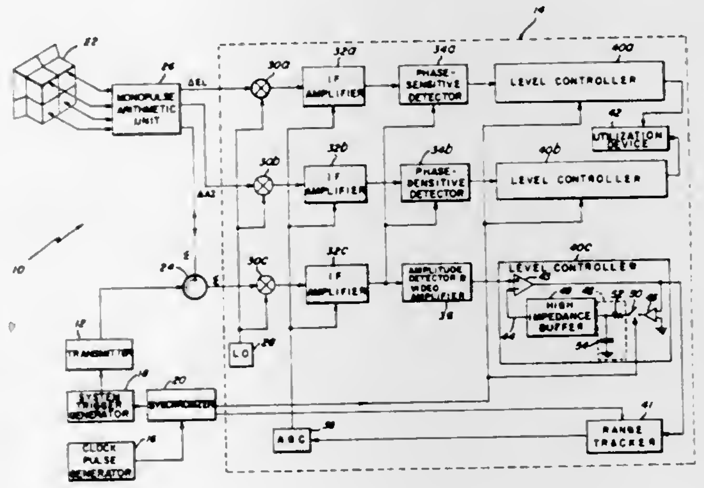
3,703,003
D.C. LEVEL CONTROLLER

Paul Diamond, Framingham, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed April 30, 1971, Ser. No. 139,119

Int. Cl. G01s *9/22*

U.S. Cl. 343—7 A **3 Claims**



A. D.C. level controller for use in a radar receiver to compensate for drift developed in D.C. coupled video circuitry. The controller includes a linear feedback loop, operative during intervals between periods during which signals are processed by such video circuitry, to develop a correction signal. The correction signal is stored and used to adjust the D.C. level of the signal out of the video circuitry. The linear feedback loop is so arranged that any drift generated therein is also compensated.

3,703,004
LEAKAGE FILTER FOR FREQUENCY MODULATED CONTINUOUS WAVE DOPPLER RADAR SYSTEM

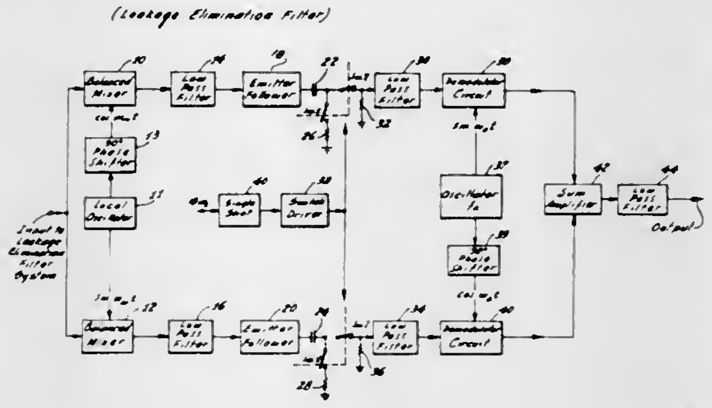
Robert Slater, Bardonia, N.Y., assignor to The Singer Company, New York, N.Y.

Filed July 1, 1971, Ser. No. 158,684

Int. Cl. G01s *9/44*

U.S. Cl. 343—8 **6 Claims**

A leakage filter for a frequency modulated continuous wave Doppler radar system is provided. The leakage filter of the present invention replaces, with a single capacitor in each channel and with a receiver blanking switch, the complex leakage filter which has been used in the prior art systems of this general type. The typical prior art filter includes, for example, a capacitor bank in each channel and a complicated switch driver. In the leakage filter of the present invention, a single capacitor in each channel is charged at the beginning of every transition, and the receiver is blanked by the aforesaid receiver blanking switch during each charging interval, as will be described.



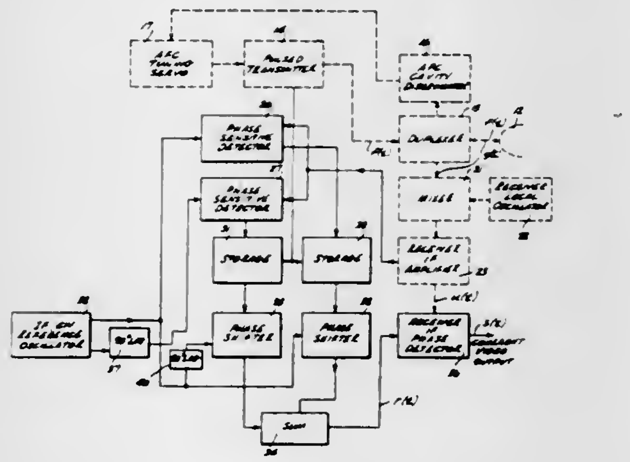
3,703,005
RADAR SIGNAL PHASE CORRECTION

Elvin E. Herman, Los Angeles; Vernon W. Lym, Torrance, and Henry L. McCord, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed June 21, 1965, Ser. No. 465,792

Int. Cl. G01s *7/28, 9/02*

U.S. Cl. 343—17.1 **19 Claims**



19. In a radar circuit of the type including a transmitter section having a circuit for generating and transmitting pulsed rf oscillatory signals, a receiver section having a circuit for detecting echo signals, the combination therewith of: a means for generating a clock reference signal; means coupled to receive a portion of the pulsed *rf* oscillator signals generated by the transmitter and coupled to receive the clock reference signal for detecting phase differences between the transmitted signal and the clock reference signal and for generating an error signal that is proportional to a function of the detected phase differences therebetween; means coupled to receive the error signal for storing the received error signal during the interpulsed period between transmitted pulse signals; a stable local oscillator means in the receiving section for generating a c-w output signal; phase shifter means coupled to receive the stable local oscillator output signal and to receive the error signal for phase shifting the local oscillator output signal to remove phase variations in the local oscillator output signal relative to the transmitted signal resulting from rf starting phase variations in the transmitted pulses; and means for receiving the echo signals and for receiving the phase shifted local oscillator signals for producing a coherent echo signal.

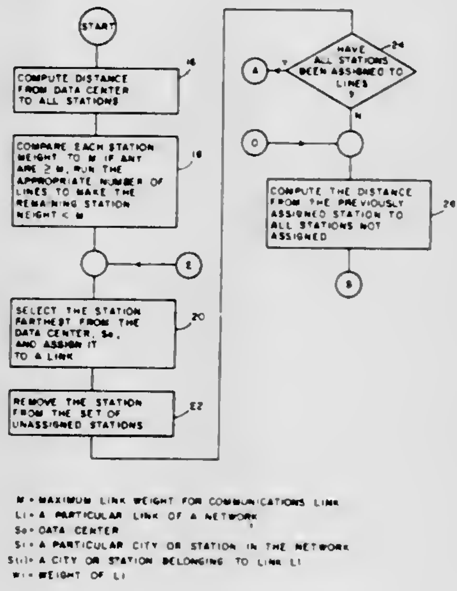
3,703,006
ALGORITHM FOR SYNTHESIZING ECONOMICAL DATA COMMUNICATION NETWORK

Roshan La. Sharma, Tustin, Calif., assignor to Collins Radio Company, Dallas, Tex.

Filed Oct. 28, 1970, Ser. No. 84,690

Int. Cl. G06f *15/56*

U.S. Cl. 444—1 **5 Claims**


START
COMPUTE DISTANCE FROM DATA CENTER TO ALL STATIONS
16
COMPARE EACH STATION WEIGHT TO W IF ANY ARE ≥ W, RUN THE APPROPRIATE NUMBER OF LINES TO MAKE THE REMAINING STATION WEIGHT < W
18
E
SELECT THE STATION FARTHEST FROM THE DATA CENTER, So, AND ASSIGN IT TO A LINK
20
REMOVE THE STATION FROM THE SET OF UNASSIGNED STATIONS
22
HAVE ALL STATIONS BEEN ASSIGNED TO LINES ?
24
A
Y
N
D
COMPUTE THE DISTANCE FROM THE PREVIOUSLY ASSIGNED STATION TO ALL STATIONS NOT ASSIGNED
26
B
W = MAXIMUM LINK WEIGHT FOR COMMUNICATIONS LINK
Li = A PARTICULAR LINK OF A NETWORK
So = DATA CENTER
Si = A PARTICULAR CITY OR STATION IN THE NETWORK
S(i) = A CITY OR STATION BELONGING TO LINK Li
Wi = WEIGHT OF Li

A technique for optimizing the connections of a plurality of stations to a central point wherein a connection link has a predetermined maximum line weight and where optimum is defined as a distance related cost comprising setting up a trial configuration in a computer and interchanging stations on adjacent links on a sequential and selective basis and comparing the cost of each selection with the previous lowest cost connection until a predetermined number of comparisons and selections have been completed.

DESIGNS

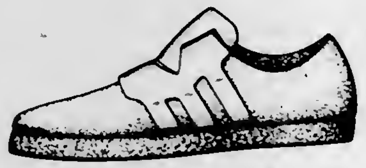
NOVEMBER 14, 1972

225,093

CASUAL SHOE OR THE LIKE

Adolf Dassler, Am Bahnhof, 8522 Merzogenaurach,
near Nuremberg, Germany
Filed Mar. 12, 1971, Ser. No. 123,921
Claims priority, application Germany Oct. 24, 1970
Term of patent 14 years
Int. Cl. D2—*04*

U.S. Cl. D2—310

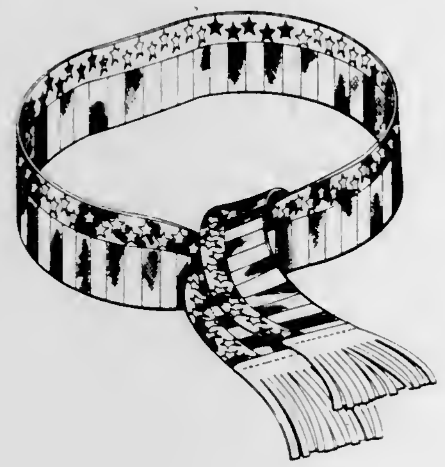


225,094

SASH

Melvin Zakarin, 23 Ogden Lane,
Englishtown, N.J. 07726
Filed July 22, 1970, Ser. No. 24,059
Term of patent 3½ years
Int. Cl. D2—*07*

U.S. Cl. D2—385

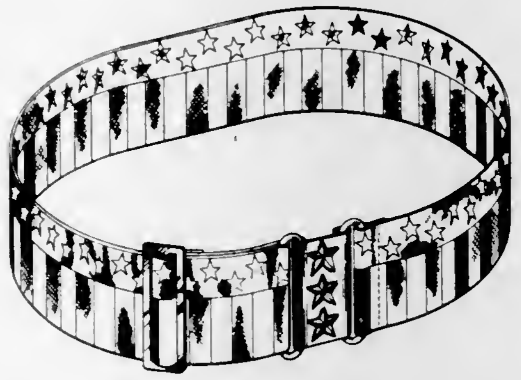


225,095

BELT

Melvin Zakarin, 23 Ogden Lane,
Englishtown, N.J. 07726
Filed July 22, 1970, Ser. No. 24,060
Term of patent 3½ years
Int. Cl. D2—*07*

U.S. Cl. D2—385

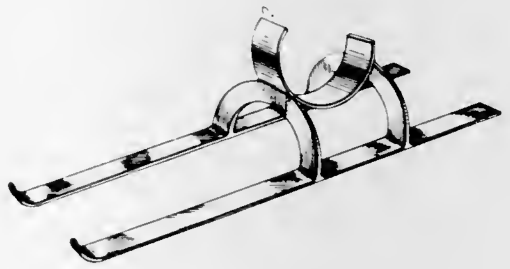


225,096

DISPLAY STAND OR THE LIKE

George M. Child, 14509 Cullen St.,
Whittier, Calif. 90603
Filed Jan. 7, 1971, Ser. No. 104,843
Term of patent 14 years
Int. Cl. D6—*06*

U.S. Cl. D6—85

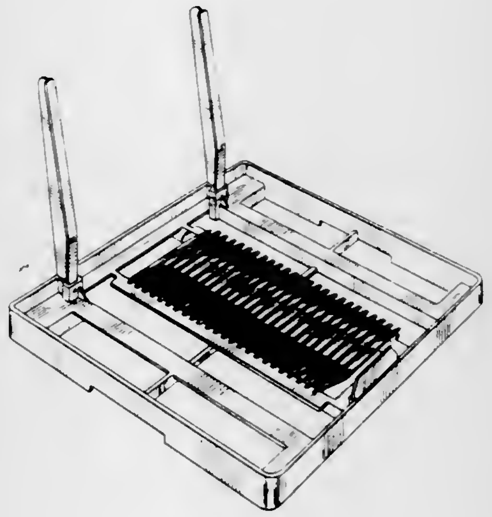


225,097

PHONOGRAPH RECORD HOLDER

Julian Gutierrez, 6233 Brookview Ave.,
Minneapolis, Minn. 55424
Filed Mar. 17, 1971, Ser. No. 125,445
Term of patent 14 years
Int. Cl. D6—*99*

U.S. Cl. D6—185

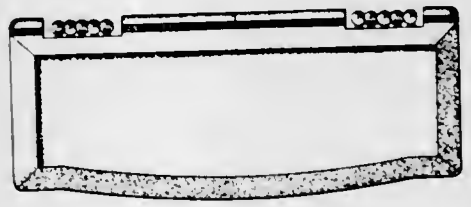


225,098

DISPLAY BOX

Robert J. Mulligan, Wheaton, Ill., assignor to
Richardson-Merrell Inc., New York, N.Y.
Filed Oct. 27, 1970, Ser. No. 25,682
Term of patent 14 years
Int. Cl. D9—*03*

U.S. Cl. D9—235

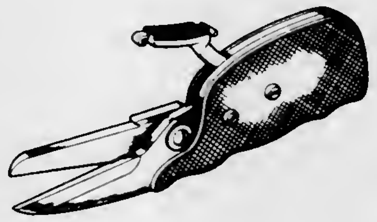


225,099

SCISSORS WITH FORCE MULTIPLIERS

Petros Zougas, Toronto, Ontario, Canada, assignor of a fractional part interest to Sokratis Romas, Toronto, Ontario, Canada
Filed Apr. 14, 1971, Ser. No. 134,113
Term of patent 14 years
Int. Cl. D8—*03*

U.S. Cl. D8—61

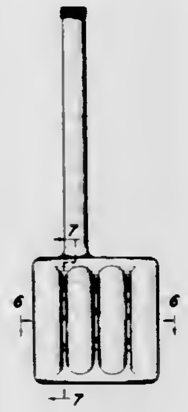


225,100

BOTTLE OR SIMILAR ARTICLE

Gerhard Wiedmann, Lochacker, Switzerland, assignor to
Greiner Electronic AG, Langenthal, Switzerland
Filed Mar. 22, 1971, Ser. No. 127,069
Term of patent 14 years
Int. Cl. D9—*01*

U.S. Cl. D9—18

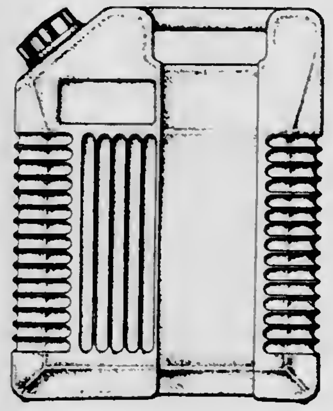


225,101

CONTAINER FOR LIQUIDS OR THE LIKE

Giovanni Marchetti, Montecatini Terme, Italy, assignor
to Bardahl Manufacturing Corporation, Seattle, Wash.
Filed Nov. 26, 1971, Ser. No. 202,714
Term of patent 14 years
Int. Cl. D9—*02*

U.S. Cl. D9—175

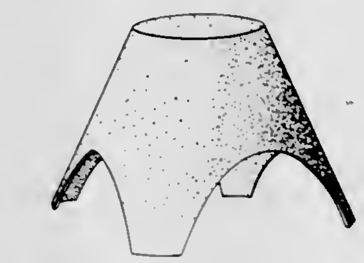


225,102

MODULAR STRUCTURE

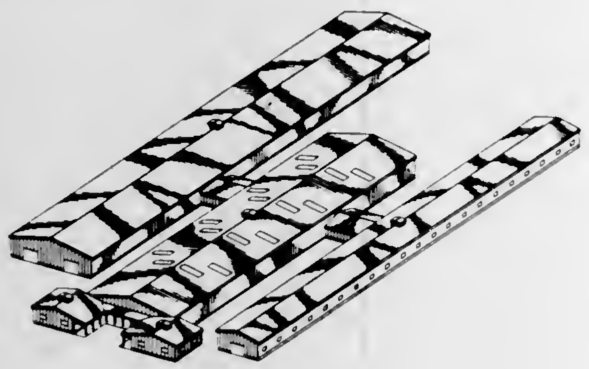
George G. Rangel, 136 Trillium, and Robert T. Harper,
Jr., 243 Future Drive, both of San Antonio, Tex. 78213
Filed Mar. 29, 1971, Ser. No. 129,279
Term of patent 14 years
Int. Cl. D25—*03*

U.S. Cl. D13—1



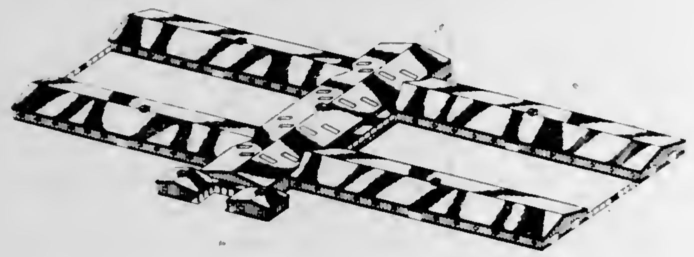
225,103
HORSE BARN

Von A. Hardman, 1719 Alice Ave., Akron, Ohio 44310
Filed May 10, 1971, Ser. No. 142,098
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



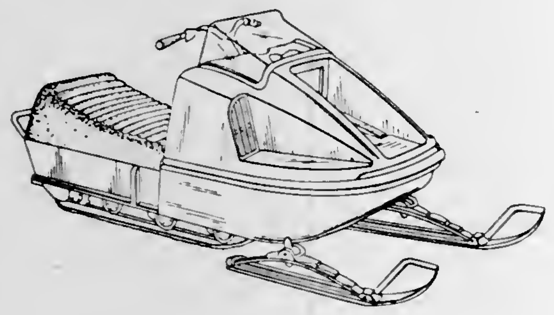
225,104
HORSE BARN

Von A. Hardman, 1719 Alice Ave., Akron, Ohio 44310
Filed May 10, 1971, Ser. No. 142,108
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



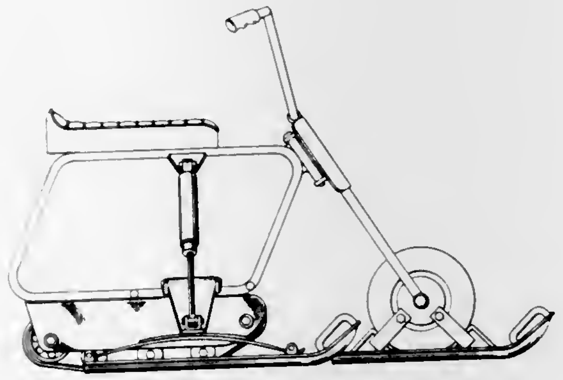
225,105
SNOWMOBILE

Anthony D. MacKeen, Drummondville, Quebec, and Yves Anselme Lapointe, Valcourt, Quebec, Canada, assignors to Bombardier Limited, Valcourt, Quebec, Canada
Continuation of design application Ser. No. 19,422, Oct. 6, 1969. This application Sept. 30, 1970, Ser. No. 25,265
Term of patent 14 years
The portion of the term of the patent subsequent to Oct. 12, 1985, has been disclaimed and dedicated to the Public
Int. Cl. D12—*13*
U.S. Cl. D14—24



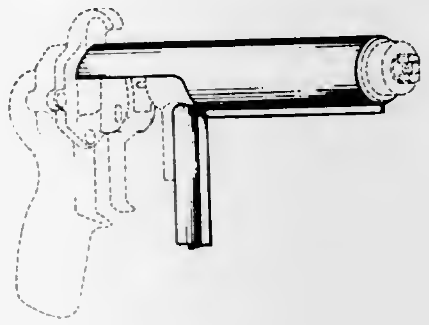
225,106
CONVERTIBLE MOTOR BICYCLE

William R. Maijala, 4029 Xenia Ave. N., Minneapolis, Minn. 55422
Continuation-in-part of abandoned design application Ser. No. 22,048, Mar. 25, 1970. This application Mar. 29, 1971, Ser. No. 129,287
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D14—24



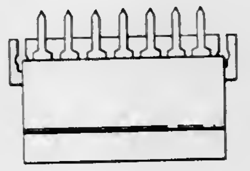
225,107
COATING MATERIAL SHEATH FOR A SPRAY COATING APPARATUS

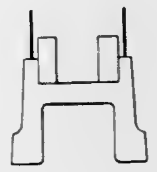
James A. Scharfenberger and John R. Snyder, Indianapolis, Ind., assignors to Ransburg Electro-Coating Corp., Indianapolis, Ind.
Filed Dec. 9, 1970, Ser. No. 26,377
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—36



225,108
ELECTRICAL CONNECTOR PRIMARILY INTENDED FOR CONNECTION TO A DUAL-IN-LINE INTEGRATED CIRCUIT

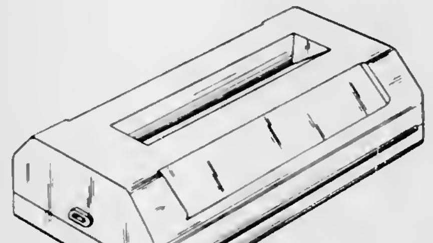
Ronald Henry Trickey, Camberley, England, assignor to Electrosil Limited, Sunderland, England
Original design application May 23, 1969, Ser. No. 17,307. Divided and this application July 21, 1970, Ser. No. 24,048
Claims priority, application Great Britain Nov. 29, 1968
Term of patent 7 years
Int. Cl. D13—*03*
U.S. Cl. D26—1





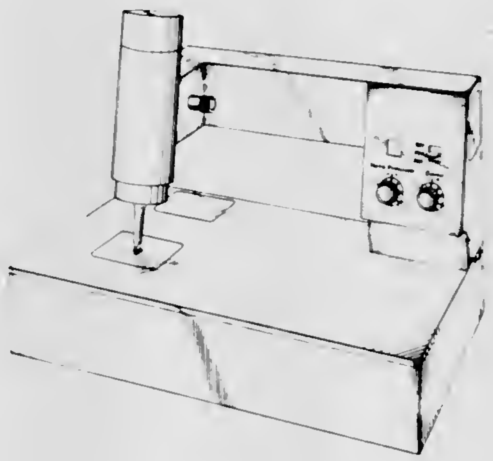
225,109
BATTERY CASE

Frank S. Flider, Chicago, Ill., assignor to The Justrite Manufacturing Company, Chicago, Ill.
Filed Dec. 14, 1970, Ser. No. 26,496
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—6



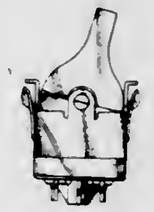
225,110
ULTRASONIC SEAMING APPARATUS

Frank Parry, Monroe, and Dino M. Savio, New Canaan, Conn., assignors to Branson Instruments, Incorporated, Stamford, Conn.
Filed May 28, 1971, Ser. No. 147,945
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D26—1



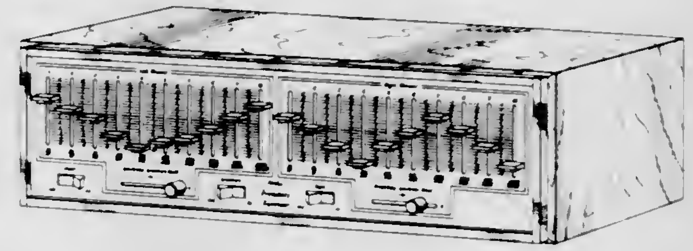
25,111
SWITCH

Yasuo Kodaira, Tokyo, Japan, assignor to Nihon Kaiheiki Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 1, 1970, Ser. No. 26,238
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



225,112
AUDIO FREQUENCY EQUALIZER

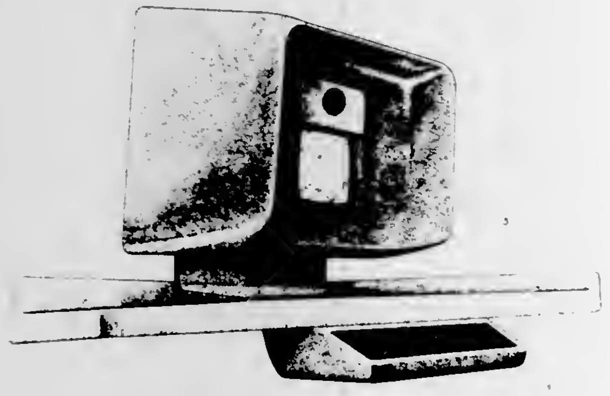
Ralph F. Yeomans, 1357 Galaxie Drive, Newport Beach, Calif. 92660
Filed June 11, 1971, Ser. No. 152,485
Term of patent 14 years
Int. Cl. D14—*03, 99*
U.S. Cl. D26—14



225,113

VIDEO TELEPHONE UNIT

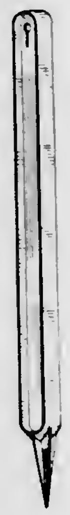
Donald Michael Genaro, Haworth, N.J., John Niel McGarvey, Drexel Hill, Pa., and Frederick Allen Rosebrock, Greenfield, Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 16, 1971, Ser. No. 163,555
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



225,114

LINK CHAIN SUPPORT POST

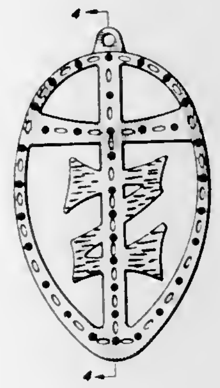
Michael T. Russo, 1805 Larchwood St., Troy, Mich. 48084
Filed Jan. 4, 1971, Ser. No. 103,951
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D28—1



225,115

RELIGIOUS MEDALLION

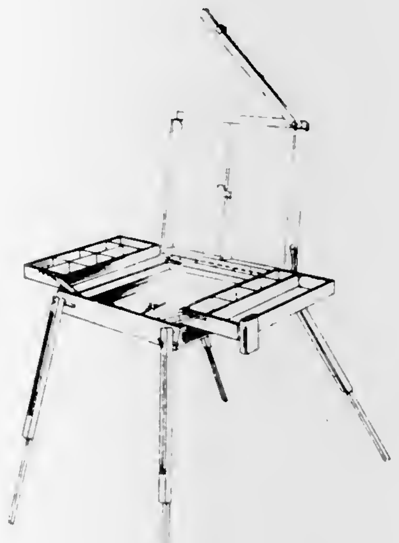
Robin Rogers, Hicksville, N.Y., assignor to Laurence M. Walker, Madison, N.J.
Filed Aug. 10, 1971, Ser. No. 170,672
Term of patent 14 years
Int. Cl. D11—*03*
U.S. Cl. D29—19



225,116

COMBINED PAINT BOX STAND AND EASEL

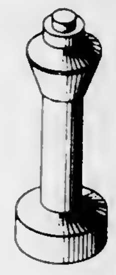
Alexander Krajeski, 2401 Laurel Pass, Hollywood, Calif. 90046
Filed Nov. 4, 1969, Ser. No. 19,924
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D29—20



225,117

SET OF CHESS MEN

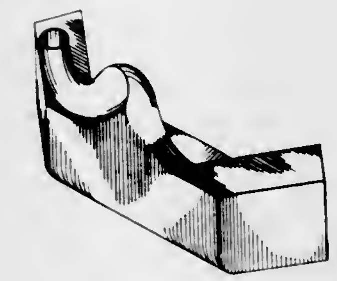
Thomas V. Evanoff, 11661 Riverdale, Detroit, Mich. 48239, and Jack S. Segel, Detroit, and James B. Colson, Sr., Dearborn Heights, Mich.; said Segel and said Colson, Sr., assignors to said Thomas V. Evanoff, Detroit, Mich.
Filed Mar. 22, 1971, Ser. No. 126,732
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



225,118

GOLF CLUB PUTTER HEAD

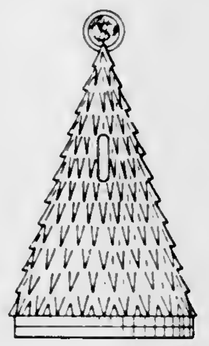
Vladimir M. Susilovich, 113 S. 55th St., Omaha, Nebr. 68132
Filed Oct. 12, 1970, Ser. No. 25,426
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



225,119

MONEY TREE BANK

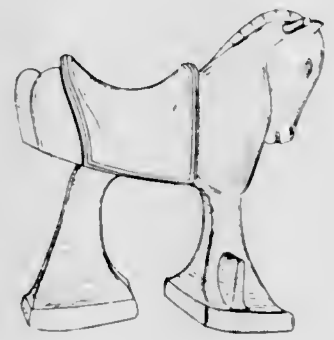
Stanley Tartar, 1235 27th St. N., Birmingham, Ala. 35200
Filed Mar. 26, 1971, Ser. No. 128,649
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—11



225,120

WALKING HORSE TOY

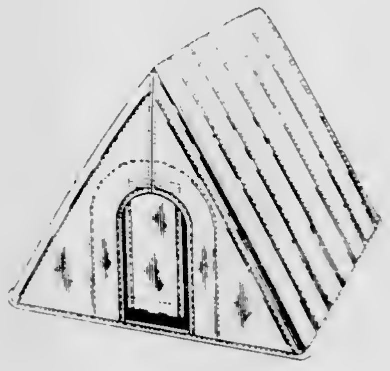
Rudy R. Proctor, Arvada, and Denver L. Proctor, Wheat Ridge, Colo., assignors to Jet-X Corporation, Denver, Colo.
Filed Jan. 29, 1971, Ser. No. 111,167
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



225,121

PET SLEEPING BAG

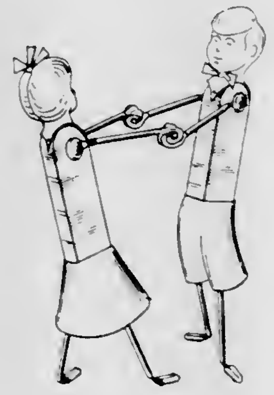
Joseph B. Mashburn, 801 E. Yosemite Ave., Madera, Calif. 93637
Filed Mar. 10, 1971, Ser. No. 123,131
Term of patent 7 years
Int. Cl. D30—*02, 06*
U.S. Cl. D30—1



225,122

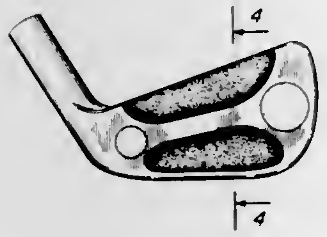
DANCING FIGURE TOY

Anthony Scampoli, 317 E. 4th St., Mount Vernon, N.Y. 10553
Filed Jan. 20, 1971, Ser. No. 108,242
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



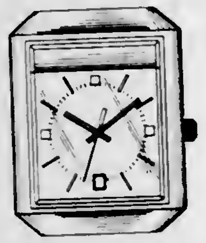
225,123
GOLF CLUB HEAD

Anthony A. Viero, North Dartmouth, Mass., Edward R. Woolley, Rancho Santa Fe, Calif., and John W. Jepson, Marion, Mass., assignors to Acushnet Company
Filed July 15, 1971, Ser. No. 163,144
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



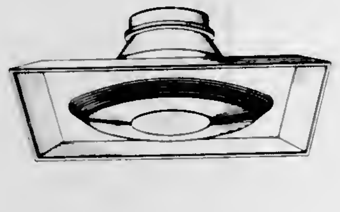
225,124
WRISTWATCH

Eiichi Osawa, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan
Filed May 17, 1971, Ser. No. 144,391
Claims priority, application Japan Nov. 25, 1970
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D42—8



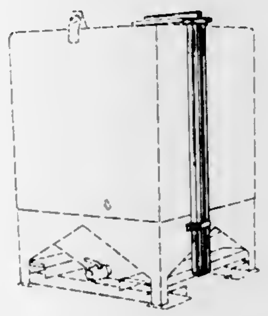
225,125
LUMINAIRE

Eldon L. Anderson, Jr., Fletcher, N.C., assignor to General Electric Company
Filed Apr. 22, 1971, Ser. No. 136,642
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—23



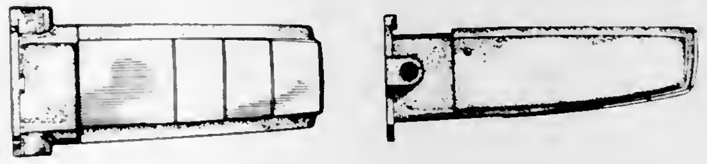
225,126
LIQUID LEVEL INDICATOR FOR A STORAGE BIN

Clarence B. Coleman and Harry B. Kattelmann, Oakland, Calif., assignors to Fabricated Metals, Inc.
Filed Aug. 19, 1970, Ser. No. 24,580
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6



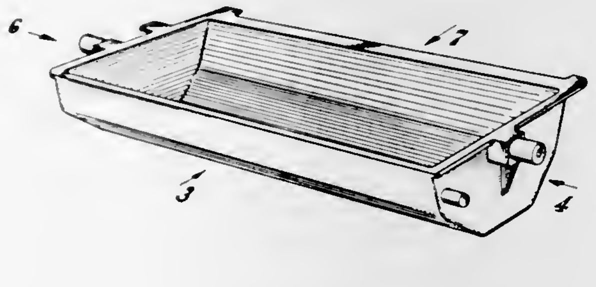
225,127
HYDRAULIC MOTOR

Bernard C. Salchow, St. Paul, Minn., assignor to Graco Inc., Minneapolis, Minn.
Filed Apr. 21, 1971, Ser. No. 136,303
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1



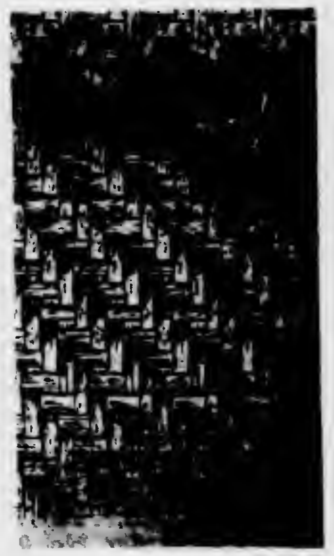
225,128
CONVEYOR BUCKET

Vaughn Gregor, 1830 W. Olympic Blvd., Los Angeles, Calif. 90006
Filed Apr. 23, 1971, Ser. No. 137,109
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1



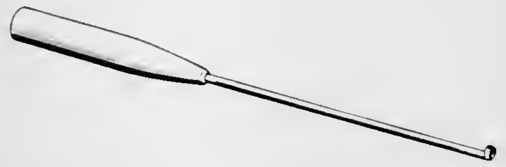
225,129
FACED THERMAL INSULATION BATTING

George A. Hoffmann, Jr., Wayne, Pa., assignor to Certain-Teed Saint Gobain Insulation Corporation, Valley Forge, Pa.
Filed Jan. 13, 1971, Ser. No. 106,307
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D59—10



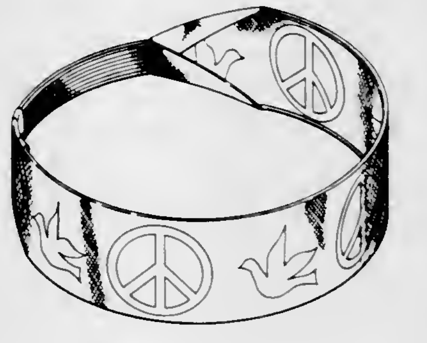
225,130
SMOKING PIPE CLEANER

Victor Pachter, 110—11 72nd Ave., New York, N.Y. 10021
Filed Nov. 14, 1969, Ser. No. 20,094
Term of patent 14 years
Int. Cl. D29—*99*
U.S. Cl. D85—7



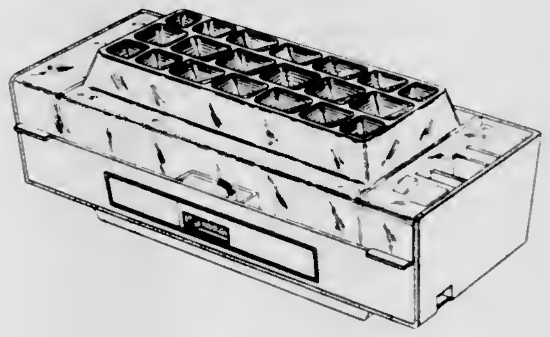
225,131
HEAD BAND

Melvin V. Zakarin, 23 Ogden Lane, Englishtown, N.J. 07726
Filed May 20, 1970, Ser. No. 23,063
Term of patent 3½ years
Int. Cl. D2—*03*
U.S. Cl. D86—10



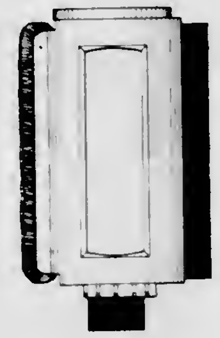
225,132
HEATER HOUSING FOR HAIR CURLERS

John L. Benty, Scotch Plains, and Daniel Friedman, Edison, N.J., assignors to Clairol Incorporated, New York, N.Y.
Filed Nov. 9, 1970, Ser. No. 25,886
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10



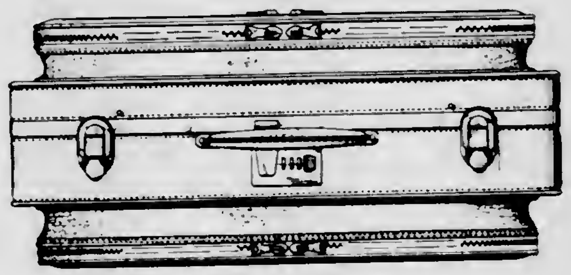
225,133
SHOE CLEANING-POLISHING DEVICE

Andrew W. Brainerd, Kent H. Brainerd, and Stuart W. Brainerd, all of 630 Walden Road, Winnetka, Ill. 60093
Filed Mar. 5, 1971, Ser. No. 121,620
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D86—11



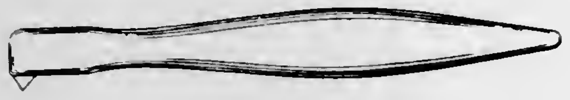
225,134
FLIGHT LUGGAGE BAG

Walter Bialo, 32—33 47th Ave., Long Island City, N.Y. 11103
Filed Mar. 16, 1970, Ser. No. 21,907
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—5



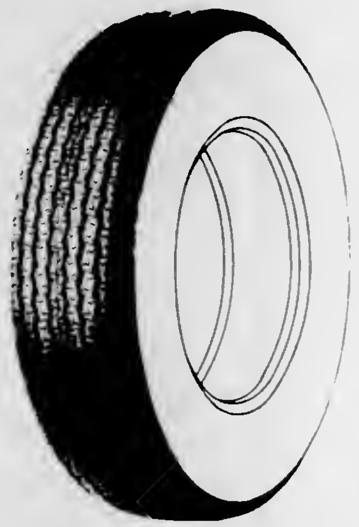
225,135
CITRUS FRUIT RIND CUTTER
Stanley Brys, 21731 E. 8 Mile Road,
St. Clair Shores, Mich. 48080
Filed June 3, 1971, Ser. No. 149,884
Term of patent 14 years
Int. Cl. D7—*04*

U.S. Cl. D89—1



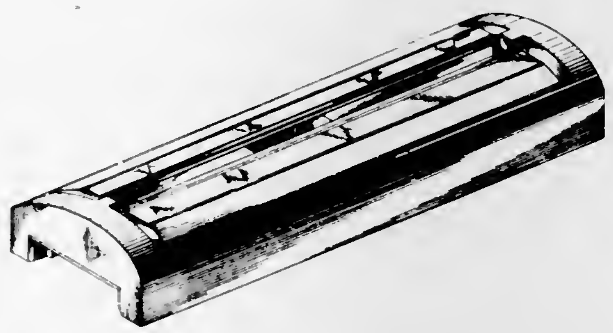
225,136
TIRE
Russell N. Sayers, Stow, and Charles W. Roberts, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 2, 1971, Ser. No. 168,516
Term of patent 14 years
Int. Cl. D12—*15*

U.S. Cl. D90—20



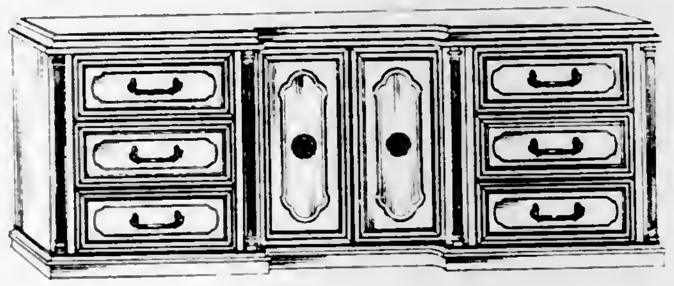
225,137
SAFETY RAZOR BLADE ASSEMBLY
Roger L. Perry, Lynnfield Center, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Mar. 15, 1971, Ser. No. 124,662
Term of patent 14 years
Int. Cl. D28—*03*

U.S. Cl. D95—3



225,138
DRESSER OR THE LIKE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Aug. 13, 1970, Ser. No. 24,471
Term of patent 14 years
Int. Cl. D6—*04*

U.S. Cl. D6—164



LIST OF PATENTEES
TO WHOM
PATENTS WERE ISSUED ON THE 14TH DAY OF NOVEMBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Abe, Masaaki: *See—*
  - Kurahashi, Koichiro; Nakada, Masanori; Abe, Masaaki; and Nishimura, Koichi, 3,702,896.
- Abma, Charles B.: *See—*
  - Leveskis, Newton G.; and Abma, Charles B., 3,702,869.
- Adams, Larry D. Wall construction. 3,702,522, Cl. 52-476.000.
- Adolphi, Heinrich: *See—*
  - Bachmann, Gerhard; and Adolphi, Heinrich, 3,702,892.
- AEI Corporation: *See—*
  - Pierce, Joseph E., 3,702,667.
- Agfa-Gevaert Aktiengesellschaft: *See—*
  - Fauth, Gunter; and Spinnler, Rainer, 3,702,953.
  - Kremp, Rudolf; and Hennig, Fridolin, 3,702,727.
  - Kremp, Rudolf; Winkler, Alfred; and Hennig, Fridolin, 3,702,729.
  - Ohlschlager, Hans; Riester, Oskar; and Meckl, Heinz, 3,702,767.
  - Winkler, Alfred; and Wagensonner, Eduard, 3,702,728.
- Aguirre, Michael C., to Honeywell Information Systems, Inc. Signal sampling circuit. 3,702,942, Cl. 307-235.00r.
- Aichenegg, Paul C., to Chemagro Corporation. Method of combatting insects, fungi or nematode using phosphono thioester amidates. 3,702,890, Cl. 424-220.000.
- Aiduck, Carl Joseph; and Mancini, Ronald Alfred, to RCA Corporation. Zero crossing point switching circuit. 3,702,941, Cl. 307-133.000.
- Aisin Seiki Kabushiki Kaisha: *See—*
  - Fujita, Saburo; Ban, Hiroshi; and Takikawa, Yukiro, 3,702,651.
- Akeley, Lloyd T., to Simmonds Precision Products, Inc. Magnetic float point sensor for high pressure containers. 3,702,910, Cl. 200-84.00r.
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  - Simmons, Bjorn Herman Olof, 3,702,588.
- Aktiengesellschaft Brown, Boveri & Cie: *See—*
  - Mottier, Francois, 3,702,737.
- Albery, Ian B. Locks. 3,702,552, Cl. 70-346.000.
- Albright & Wilson Limited: *See—*
  - Farquhar, James G.; Gibson, Geoffrey M.; and Joice, Brian J., 3,702,784.
- Alcan Research and Development Limited: *See—*
  - Sergerie, Felix Antoine, 3,702,631.
- Alger, David W. Adjustable lighting apparatus. 3,702,928, Cl. 240-1.400.
- Allen, Elmer Lawrence, Jr.: *See—*
  - Kawamoto, Hiroshisa; and Allen, Elmer Lawrence, Jr., 3,702,971.
- Allmanna Svenska Elektriska Aktiebolaget: *See—*
  - Larker, Hans; and Nilsson, Jan, 3,702,555.
  - Larker, Hans; and Nilsson, Jan, 3,702,556.
  - Virsbreg, Lars-Goran, 3,702,499.
- Alnor Instrument Company: *See—*
  - Obermaier, Alfred A.; and Pierman, Martin J., 3,702,566.
- Amend, William P., to Wean United, Inc. Apparatus for supporting yokes for a rolling mill having roll contour control. 3,702,557, Cl. 72-238.000.
- American Air Filter Company, Inc.: *See—*
  - Gamble, Edward R., 3,702,592.
- American Cyanamid Company: *See—*
  - Daly, William F.; and Vallancourt, Ronald J., 3,702,605.
- American Micro-Systems, Inc.: *See—*
  - Borden, Howard C., Jr., 3,702,723.
  - McPhail, James H., 3,702,967.
- American Optical Corporation: *See—*
  - Young, Charles G., 3,702,976.
- American Safety Equipment Corporation, mesne: *See—*
  - Barmasse, Alfred C.; and Jachacz, Edmund A., 3,702,486.
- Amoco Production Company: *See—*
  - Farr, John B., 3,702,635.
  - Hunt, Elton B., Jr.; and Hujsak, Karol L., 3,702,884.
- AMP Incorporated: *See—*
  - de Sio, Frederick Carl, 3,702,895.
- Anchor Hocking Corporation: *See—*
  - Brady, Dale J.; and Gerken, George W., 3,702,563.
- Anderson, Bruce J.; and Noegel, Charles R., to Electronic Design & Services, Inc. Signature counter. 3,702,925, Cl. 235-98.00r.
- Anderson, Merlin F.; and Perkins, Lee E., to Halliburton Company. Retrievable packer apparatus for use in a well bore and method of prolonging its operating life. 3,702,634, Cl. 166-315.000.
- Anstalt Europaische Handelsgesellschaft: *See—*
  - Sturzinger, Oskar, 3,702,900.
- Aqua Therm Products Corporation: *See—*
  - Tobinick, Sidney; and Semenoff, Arnold, 3,702,484.
- Arai, Masetoshi: *See—*
  - Ishibashi, Keijiro; Okaniwa, Tokio; Hattori, Atsushi; and Arai, Masetoshi, 3,702,805.
- Arganbright, Robert P., to Petro-Tex Chemical Corporation. Dismutation of olefins. 3,702,827, Cl. 252-441.000.
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- Argus Chemical Corporation: *See—*
  - Leveskis, Newton G.; and Abma, Charles B., 3,702,869.
- Ashbrook, Richard L.: *See—*
  - Freche, John C.; Waters, William J.; and Ashbrook, Richard L., 3,702,791.
- Ashton, William B.: *See—*
  - Cummins, Billy H.; Ashton, William B.; Coleman, Richard L.; and Odell, Norman R., 3,702,817.
- Asselman, George Albert Apolonia: *See—*
  - Dirne, Adrianus Petrus; Asselman, George Albert Apolonia; and van der As, Herman Henricus Maria, 3,702,533.
- Asta, Leone Dall: *See—*
  - Pedrazzoli, Andrea; and Asta, Leone Dall, 3,702,850.
- Astro-Arc Co.: *See—*
  - Vilkas, Eugene P.; and Kazlauskas, Gasparas, 3,702,915.
- Astro-Arc Company: *See—*
  - Kazluaskas, Gasparas; and Gedgaudas, Mindaugas E., 3,702,913.
- Atek Industries, Inc.: *See—*
  - Mandroian, Harold, 3,702,814.
- Audiscan Incorporated: *See—*
  - Skuja, Ivars M., 3,702,721.
- Avco Corporation: *See—*
  - Daugherty, Jack D.; Douglas-Hamilton, Diarmaid H.; Patrick, Richard M.; and Pugh, Evan R., 3,702,973.
- Babel, Louis: *See—*
  - Peytavin, Pierre; and Babel, Louis, 3,702,630.
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- Bachmann, Gerhard; and Adolphi, Heinrich, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Halobenzoylpropionic acid esters as insect repellants. 3,702,892, Cl. 424-308.000.
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- Balamuth, Lewis, to Ultrasonic Systems, Inc. Ultrasonic motors and scissors. 3,702,948, Cl. 310-8.200.
- Balzer, Norbert Raymond, to Park-Ohio Industries, Inc. Method and apparatus for inductively heating and quenching elongated workpieces. 3,702,693, Cl. 266-4.00s.
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- Bard, Jackson F. Signal counter. 3,702,904, Cl. 179-2.00a.
- Barker, Sidney Alan; Somers, Peter John; and Epton, Roger, to McDougall, Ranks Hovis, Limited. Hydrolytic enzymes chemically coupled to cellulose ethers. 3,702,804, Cl. 195-63.000.
- Barmasse, Alfred C.; and Jachacz, Edmund A., to American Safety Equipment Corporation, mesne. Safety rupture assembly. 3,702,486, Cl. 9-11.00a.
- Barnard, Roy Albert Drake, to Rancray Limited. Speculum. 3,702,606, Cl. 128-17.000.
- Barozier, Jean-Pierre; and Nicco, Adrien, to Ethylene-Plastique. Reaction of ethylene/maleic anhydride statistical copolymers with polyamines. 3,702,782, Cl. 117-118.000.
- Barton, Filex Phillip, to Commercial Communications, Ltd., mesne. Telephone security device. 3,702,903, Cl. 179-18.0da.
- Barton, Sterling C.: *See—*
  - Carson, Chester C.; Echeverria, Federico S.; and Barton, Sterling C., 3,702,561.
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  - United States of America, National Aeronautics and Space Administration, 3,702,762.
- Bate, Robert Thomas; and West, Forrest Gerome, Jr., to Texas Instruments, Incorporated. Magnetic domain memory structure. 3,702,991, Cl. 340-174.0tf.
- Battelle Memorial Institute: *See—*
  - Meuller, William J.; and Nowacki, Louis J., 3,702,778.
- Battiston, Giancarlo: *See—*
  - Santangelo, Nicola; Battiston, Giancarlo; Pregaglia, Gianfranco; Cavaterra, Enrico; and Croci, Mauro, 3,702,868.
- Bausch & Lomb Incorporated: *See—*
  - Hall, Thomas O., Jr.; and Peck, William G., 3,702,922.

- Baxendale, Albert Edward; and Young, Edward John, to Brico Engineering Limited. Internal combustion engines. 3,702,603, Cl. 123-97.00b.
- Baxter Laboratories, Inc.: *See—*
  - Regan, Bernard M., 3,702,872.
- Beasley, Noel F.; and Wever, Ray, to Mattel, Inc. Telephone-talking doll simulator. 3,702,515, Cl. 46-232.000.
- Beatty, Robert W.: *See—*
  - United States of America, National Aeronautics and Space Administration, 3,702,979.
- Becht, Raymond F. Plastic bag dispenser. 3,702,672, Cl. 225-106.000.
- Bechtold, Max F., to Du Pont de Nemours, E. I., and Company. Power fluids for rankine cycle engines. 3,702,534, Cl. 60-36.000.
- Beckley, Addison S., to Uniroyal, Inc. Motor vehicle injury and damage prevention system. 3,702,711, Cl. 296-31.00p.
- Bedi, Ram Dev, to M & T Chemicals, Inc. Method of preventing etch in plating baths. 3,702,809, Cl. 204-15.000.
- Bekum Maschinenfabriken GmbH: *See—*
  - Mehnert, Gottfried, 3,702,751.
- Bell, Charles S.; and Wulff, Harald P., to Shell Oil Company. Olefin epoxidation. 3,702,855, Cl. 260-348.0sl.
- Bell Telephone Laboratories, Incorporated: *See—*
  - Bobeck, Andrew Henry; Ciak, Frank John; and Strauss, Walter, 3,702,995.
  - Kish, Donald Eugene; and Smith, James Lanson, 3,702,994.
  - Miller, Stewart Edward, 3,702,975.
  - Thelen, William, 3,702,921.
  - Trambarulo, Ralph Francis, 3,702,722
- Bellardy, Roger: *See—*
  - Zeter, Francois; Bellardy, Roger; Pouligny, Claude; and Walter, Marc, 3,702,529.
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- Bendix Corporation, The: *See—*
  - Branson, Orland D., 3,702,714.
- Beneria, Giovanni Bessolo, to Olivetti, Ing. C., & C., S.p.A. Machine for forming thermoplastic resin parts by injection mounding. 3,702,750, Cl. 425-130.000.
- Bent, Christopher James; Flynn, Terence David; and Glover, Brian, to Imperial Chemical Industries, Limited. Process for transfer dyeing of synthetic textile materials. 3,702,752, Cl. 8-2.500.
- Berger, William L. Apparatus for handling a container of parts. 3,702,660, Cl. 214-1.0qe.
- Berry, Van H., Jr., to Trinity Industries, Incorporated. Storage tank assembly and method of installing it. 3,702,661, Cl. 214-152.000.
- Besson, Rene: *See—*
  - Chiarelli, Robert; Rassat, Andre; Besson, Rene; and Salvi, Antoine, 3,702,831.
- Besson, Rene; Lawsser, Claude; and Rochat, Daniel, to Ebauches S. A. Timepiece with circumferentially indexed setting positions. 3,702,530, Cl. 58-85.500.
- Bevengut, Bernard, to Societe Anonyme dite: Etablissements Pierre Bevengut. Fluidic control mixing nozzle. 3,702,684, Cl. 239-412.000.
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  - Santangelo, Nicola; Battiston, Giancarlo; Pregaglia, Gianfranco; Cavaterra, Enrico; and Croci, Mauro, 3,702,868.
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  - Fernandez, Alberto Antonio, 3,702,821.
- Birchall, James Derek; and Cassidy, John Edward, to Imperial Chemical Industries Limited. Mould treatment. 3,702,774, Cl. 117-5.100.
- Blasenak, David H.: *See—*
  - Tucker, Roy G.; Blasenak, David H.; and Johnson, Ralph W., 3,702,607.
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  - Davin, Donald R., 3,702,578.
- Blizard, Horace A., to Mosler Safe Company, The. Time delay combination locks. 3,702,551, Cl. 70-269.000.
- Bloch, Heinz P., to Esso Research and Engineering Company. Noncontacting seal for centrifuge inlet. 3,702,704, Cl. 277-134.000.
- Bobeck, Andrew Henry; Ciak, Frank John; and Strauss, Walter, to Bell Telephone Laboratories, Incorporated. Single wall domain arrangement. 3,702,995, Cl. 340-174.0eb.
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- Bohemen, John, to BP Chemicals Limited. Stabiliser system. 3,702,830, Cl. 252-404.000.
- Bohm, Heinz-Dieter: *See—*
  - Schlotmann, Karl; Bohm, Heinz-Dieter; and Ruggen, Werner, 3,702,545.
- Boone, Christopher B., to Rohm and Haas Company. Screwless terminal fuse box. 3,702,877, Cl. 339-95.00d.
- Borden, Howard C., Jr., to American Micro-Systems, Inc. Segmented master character for electronic display apparatus. 3,702,723, Cl. 350-160.0lc.
- Bosch, Robert, G.m.b.H.: *See—*
  - Schadlich, Fritz, 3,702,705.
  - Schnell, Gerhard, 3,702,641.
  - Staudt, Heinrich; and Prillwitz, Rolf, 3,702,577.
  - Sturmer, Hans, 3,702,683.
  - Wohr, Rolf; and Gotz, Eckart, 3,702,962.
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- Boysel, Lee L.: *See—*
  - Faith, Jack L.; Boysel, Lee L.; and Murphy, Joseph P., 3,702,945.
- BP Chemicals (U.K.) Limited: *See—*
  - Yeomans, Bertram, 3,702,834.
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  - Bohemen, John, 3,702,830.
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  - Moller, Heinrich, 3,702,918.
- Bredereck, Hellmut F. I.; Iliopulos, Miltiadis I.; and Wieder, Horst F. Bis-(p-hydroxyphenyl) alkyl-phosphonic acid esters, process for preparing the same. 3,702,879, Cl. 260-953.000.
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  - Baxendale, Albert Edward; and Young, Edward John, 3,702,603.
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- Brunswick Corporation, mesne: *See—*
  - Clark, Raymond C., 3,702,659.
- Buchmann, Fred J.; and Hamner, Glen P., to Esso Research and Engineering Company. Low sulfur coke from virgin residua. 3,702,816, Cl. 208-50.000.
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- Buechner, Oskar: *See—*
  - Steigerwald, Klaus; Buechner, Oskar; Urban, Friedrich; and Pfannmueller, Helmut, 3,702,845.
- Burch, Jack J., to Texas Instruments, Incorporated. Coherent light array for use in image projection systems. 3,702,929, Cl. 240-41.000.
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  - Das Chaklader, Asoke Chandra, 3,702,881.
- Candor, James T.: *See—*
  - Candor, Robert R.; and Candor, James T., 3,702,919.
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  - Goshima, Takeshi; Iwawaki, Yasutaka; and Yutaka, Kohtani, 3,702,506.
  - Kinjo, Kikuo; Yamanouchi, Teruo; Kondo, Eiichi; Matsuno, Hiroshi; and Nishide, Katsuhiko, 3,702,764.
- Capasso, Philip J.: *See—*
  - Finucane, Thomas P.; and Capasso, Philip J., 3,702,768.
- Cardinne, Philippe: *See—*
  - Renard, Michel; Cardinne, Philippe; and Manhes, 3,702,956.
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  - Dobosan, Valeriu; and Cascaval, Nicolae, 3,702,916.
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  - Birchall, James Derek; and Cassidy, John Edward, 3,702,774.
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  - Santangelo, Nicola; Battiston, Giancarlo; Pregaglia, Gianfranco; Cavaterra, Enrico; and Croci, Mauro, 3,702,868.

- Center for Scientific Studies, Inc.: *See—*
  - Schmitt, Peter C.; Vette, Carl W.; and Meyer, Amos J., II, 3,702,899.
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  - Fowler, Neal V., Jr.; Gallagher, Arthur P.; and Chance, Calvin L., Jr., 3,702,644.
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  - Aichenegg, Paul C., 3,702,890.
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  - Rice, Edwin Eugene; and Franklin, Charles Henry, 3,702,519.
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  - Mehmedbasich, Enver, 3,702,757.
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  - Koceich, Mark J.; and Chirash, William, 3,702,826.
- Choate, William C.: *See—*
  - Taylor, Fredrick James; and Choate, William C., 3,702,986.
- Chris-Craft Industries, Inc.: *See—*
  - Thompson, Theodore G., 3,702,485.
- Christensen, Carl R. Tool for forming and shaping wax-like substances. 3,702,917, Cl. 219-230.000.
- Christmann, Harold F.: *See—*
  - Manning, Harold E.; Woskow, Marvin Z.; and Christmann, Harold F., 3,702,875.
- Ciak, Frank John: *See—*
  - Bobeck, Andrew Henry; Ciak, Frank John; and Strauss, Walter, 3,702,995.
- Cinadr, Bernard F.: *See—*
  - Diliddo, Bart A.; and Cinadr, Bernard F., 3,702,840.
- Cincinnati Milacron, Inc.: *See—*
  - Decker, Jacob, 3,702,716.
  - Joele, Hector, 3,702,663.
- Cintract, Bernard G.; and Sevin, Rene G., to Compagnie Francaise des Petroles. Tipping girder for the transfer of rods or tubular elements. 3,702,640, Cl. 175-85.000.
- Cirillo, James. Cartridge holder. 3,702,671, Cl. 224-20.000.
- Cities Service Company: *See—*
  - Markey, Joseph W., 3,702,885.
- Clark, Raymond C., to Brunswick Corporation, mesne. Filter cores. 3,702,659, Cl. 210-343.000.
- Clement, Morris. Sugarcane planting machine. 3,702,664, Cl. 221-185.000.
- Cleveland, Rex: *See—*
  - Womble, George E.; and Cleveland, Rex, 3,702,639.
- Cochran, William H., II. Antistatic textile product. 3,702,797, Cl. 161-66.000.
- Coggeshall, John C. Spectrophotometer. 3,702,736, Cl. 356-96.000.
- Coggings, Thomas M.: *See—*
  - Odum, William T.; Elkins, James H.; and Coggings, Thomas M., 3,702,597.
- Coleman, Richard L.: *See—*
  - Cummins, Billy H.; Ashton, William B.; Coleman, Richard L.; and Odell, Norman R., 3,702,817.
- Colgate-Palmolive Company: *See—*
  - Koceich, Mark J.; and Chirash, William, 3,702,826.
- Collins Radio Company: *See—*
  - LaSharma, Roshan, 3,703,006.
- Colonial Sugar Refining Company, Limited, The: *See—*
  - Frew, Ronald, 3,702,527.
- Commercial Communications, Ltd., mesne: *See—*
  - Barton, Filex Phillip, 3,702,903.
- Communication Satellite Corporation: *See—*
  - Shigaki, Seiichiro, 3,702,944.
- Compagnie des Compteurs: *See—*
  - Dunou, Pierre Andre, 3,702,927.
- Compagnie Francaise des Petroles: *See—*
  - Cintract, Bernard G.; and Sevin, Rene G., 3,702,640.
  - Garnier, Henri Louis, 3,702,938.
- Compagnie Industrielle de Mechanismes: *See—*
  - Boyriven, Paul, 3,702,960.
- Compton, Lloyd A.: *See—*
  - Mc Caul, James F., III.; and Compton, Lloyd A., 3,702,523.
- Computervision Corporation: *See—*
  - Sliwkowski, Joseph J., 3,702,732.
- Conner, Charles J., to United States of America, Agriculture. Pad bath formulation of iron salt, ammonium oxalate and zirconyl ammonium carbonate. 3,702,753, Cl. 8-52.000.
- Consolidated Film Industries: *See—*
  - Sokolow, Leonard L., 3,702,733.
- Constantin Graf von Berckheim: *See—*
  - Eichmeier, Joseph, 3,702,526.
- Continental Tapes, Incorporated: *See—*
  - Dahl, Rolf, 3,702,781.
- Cooper, Edward: *See—*
  - Wolfer, Allan J.; and Cooper, Edward, 3,702,996.
- Corey, Robert W. Monorail switching device. 3,702,590, Cl. 104-105.00.
- Cosenza, Frank J., to Tridair Industries. Lock nut member. 3,702,628, Cl. 151-21.00b.
- Cox, James P. Stick-classifying method and apparatus. 3,702,655, Cl. 209-80.000.
- Craigne, William J. S.; Ritcey, Gordon M.; Joe, Edwin Glendon; Melvanin, William; and Smart, Bruce C., to El dorado Nuclear Limited. Zirconium tetrafluoride process. 3,702,883, Cl. 423-82.000.
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- Cramer Instrument Flight School, Inc.: *See—*
  - Cramer, Harry E., 3,702,504.
- Croci, Angelo: *See—*
  - Santangelo, Nicola; Battiston, Giancarlo; Pregaglia, Gianfranco; Cavaterra, Enrico; and Croci, Mauro, 3,702,868.
- Croci, Mauro: *See—*
  - Santangelo, Nicola; Battiston, Giancarlo; Pregaglia, Gianfranco; Cavaterra, Enrico; and Croci, Mauro, 3,702,868.
- Cronin, Timothy H.; and Hess, Hans-Jurgen E., to Pfizer Inc. 4-(Isoquinolin-1-yl) piperazine 1 carboxylic acid esters. 3,702,849, Cl. 260-268.00c.
- Csathy, Denis G., to Raygo, Inc. Gas-to-gas heat exchanger. 3,702,633, Cl. 165-159.000.
- Cummins, Billy H.; Ashton, William B.; Coleman, Richard L.; and Odell, Norman R., to Texaco Inc. Production of lubricating oils including hydrofining an extract. 3,702,817, Cl. 208-87.000.
- Cunningham, Gerald Robert; and Wooddy, Lemuel Dale, Jr., to Esso Production Research Company. Pollution containment barrier. 3,702,657, Cl. 210-242.000.
- Dahl, Rolf, to Continental Tapes, Incorporated. Method of impregnating permeable materials with a polyurethane polymer. 3,702,781, Cl. 117-118.000.
- Dale, James W.: *See—*
  - Beltramini, Henry P.; and Dale, James W., 3,702,793.
- Daly, William F.; and Vallancourt, Ronald J., to American Cyanamid Company. Cell dispersal method for monkey kidney tissue. 3,702,605, Cl. 128-1.00r.
- Darrow, John O. G., to Westinghouse Air Brake Company. Fail-safe comparator. 3,702,939, Cl. 307-2.000.
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- Daugherty, Jack D.; Douglas-Hamilton, Diarmaid H.; Patrick, Richard M.; and Pugh, Evan R., to Avco Corporation. Laser or ozone generator in which a broad electron beam with a sustainer field produce a large area, uniform discharge. 3,702,973, Cl. 331-94.5p.
- Davieau, Felix K. Lift and dump apparatus. 3,702,662, Cl. 214-302.000.
- Davin, Donald R., to Blaw-Knox Construction Equipment, Inc. Quick change screed extension for paving machines. 3,702,578, Cl. 94-45.00r.
- Davis, Bernard J.; and Ranson, Wesley J., to Reichhold Chemicals, Inc. Copolymers from paratertiary butyl styrene and diisobutylene and method for producing same. 3,702,842, Cl. 260-88.20c.
- Dayco Corporation: *See—*
  - Stikkers, Tieme C., 3,702,570.
- De Luca, Hector F.; and Suda, Tatsuo, to Wisconsin Alumni Research Foundation. Photochemical method for preparing 25-hydroxytachysterol. 3,702,810, Cl. 204-158.00r.
- De Matte, Michael L., to Westvaco Corporation. Process of making prelubricated paper. 3,702,801, Cl. 162-173.000.
- De Shazer, Larry Grant: *See—*
  - Koechner, Walter; Rice, Dennis Keith; and De Shazer, Larry Grant, 3,702,974.
- de Sio, Frederick Carl, to AMP Incorporated. Cable terminator with dielectric. 3,702,895, Cl. 174-19.000.
- Decker, Jacob, to Cincinnati Milacron, Inc. Round gib for machine slide. 3,702,716, Cl. 308-3.00a.
- Deering Milliken Research Corporation: *See—*
  - Pearce, Larry N., 3,702,492.
  - Young, William O., Jr., 3,702,654.
- Delve, Malcolm Hoban: *See—*
  - Newson, Ivan Henry; and Delve, Malcolm Hoban, 3,702,807.
- Devery, James J.: *See—*
  - Cairns, Benjamin F., III, 3,702,712.
- Diablo Systems, Inc.: *See—*
  - Jamieson, John W., 3,702,997.
- Diamond, Paul, to Raytheon Company. D. C. level controller. 3,703,003, Cl. 343-7.00a.
- Diliddo, Bart A., and Cinadr, Bernard F., to Goodrich, B. F., Company, The. Reduction of polymer build-up in ethylene copolymerization. 3,702,840, Cl. 260-80.780.
- Dion, Paul A.; and Hagarman, Paul O., to Polymetallurgical Corporation. Manufacture of clad metals. 3,702,497, Cl. 29-474.300.
- Dirne, Adrianus Petrus; Asselman, George Albert Apolonia; and van der As, Herman Henricus Maria, to U.S. Philips Corporation. Hot-gas machine comprising a heat transfer device. 3,702,533, Cl. 60-24.000.

Dobosan, Valeriu; and Cascaval, Nicolae, to Uzina de Autocamioane "Steagul Rosu" Brasov. Welding unit for motor car wheels. 3,702,916, Cl. 219-125.00k.

Donato, Thomas C. Fishing rod line guide and mounting. 3,702,514, Cl. 43-24.000.

Donovan, Lawrence E., to General Electric Company. 2-Transistor saturating core high-voltage inverter. 3,702,963, Cl. 321-2.000.

Douglas-Hamilton, Diarmaid H.: *See—*
  Daugherty, Jack D.; Douglas-Hamilton, Diarmaid H.; Patrick, Richard M.; and Pugh, Evan R., 3,702,973.

Dow Corning Corporation: *See—*
  Greenlee, Thomas W., 3,702,835.
  Hartlein, Robert C., 3,702,794.
  Vaughn, James R., 3,702,769.

Dreier, Raymond C. Blade holder. 3,702,627, Cl. 145-33.00a.

Drexler, Karl F.; and Kudlacik, Henry W., to General Electric Company. Internal static excitation system for a dynamoelectric machine. 3,702,965, Cl. 322-25.000.

Drozd, Charles J.: *See—*
  Haney, Ralph D.; Zachar, James E.; and Drozd, Charles J., 3,702,988.

Drucker, Rubin: *See—*
  Reasenberg, Julian R.; and Drucker, Rubin, 3,702,865.

Du Bois, Clair O.: *See—*
  Budois, Clairo O., 3,702,703.

Du Pont de Nemours, E. I., and Company: *See—*
  Bechtold, Max F., 3,702,534.
  Hall, Elmer Linwood; and Looby, John Thomas, 3,702,773.
  Hartley, Irby Ennis, Jr., 3,702,528.
  McNamara, James Francis; and Turner, Richard Ellis, 3,702,658.
  Wilson, Donald Richard, 3,702,838.

Duffy, Michael Thomas, to RCA Corporation. MOS transistor with aluminum oxide gate dielectric. 3,702,786, Cl. 117-212.000.

Dungan, Paul, to Grace, W. R., & Co. Process for eliminating flashing from molded thermoplastic articles. 3,702,789, Cl. 134-5.000.

Dunham, Kenneth R.; Newcomb, Richard A.; and Yost, Marshall E., to Eastman Kodak Company. Photoresist compositions containing N-halo cyclic imides. 3,702,766, Cl. 96-75.000.

Dunou, Pierre Andre, to Compagnie des Compteurs. Pulse rate device to compute square root of products. 3,702,927, Cl. 235-158.000.

Eastman Kodak Company: *See—*
  Dunham, Kenneth R.; Newcomb, Richard A.; and Yost, Marshall E., 3,702,766.
  Laakso, Thomas M., 3,702,765.
  Leutwein, Manfred; and Streicher, Heinz, 3,702,697.
  Nerwin, Hubert, 3,702,579.
  Russell, William C., 3,702,730.

Eastman Kodak Company, mesne: *See—*
  Wolfer, Allan J.; and Cooper, Edward, 3,702,996.

Eaton Corporation: *See—*
  Trabbic, Geraldw.; 11/14/72; and Managan, William W., 3,704,588.

Ebauches S. A.: *See—*
  Besson, Rene; Lawsser, Claude; and Rochat, Daniel, 3,702,530.

Echeverria, Federico S.: *See—*
  Carson, Chester C.; Echeverria, Federico S.; and Barton, Sterling C., 3,702,561.

Edwards, John A.; and Fried, John H., to Syntex Corporation. Certain 5-substituted tetrahydro isobenzofuran-1-ones. 3,702,853, Cl. 260-343.300.

Eggenberger, Delbert N.: *See—*
  Moses, Harry; Eggenberger, Delbert N.; Halverson, Steven L.; and Managan, William W., 3,702,565.

Eichmeier, Joseph, to Constantin Graf von Berckheim. Air ionization and cleaning arrangement. 3,702,526, Cl. 55-102.000.

Eisai Co., Ltd.: *See—*
  Kohno, Shigeharu; Komaki, Tatsuo; and Watanabe, Hideaki, 3,702,867.

El dorado Nuclear Limited: *See—*
  Craigne, William J. S.; Ritcey, Gordon M.; Joe, Edwin Glendon; Melvanin, William; and Smart, Bruce C., 3,702,883.

Electromitor, Inc.: *See—*
  Willis, John R., 3,702,902.

Electronic Design & Services, Inc.: *See—*
  Anderson, Bruce J.; and Noegel, Charles R., 3,702,925.

Elkins, James H.: *See—*
  Odum, William T.; Elkins, James H.; and Coggings, Thomas M., 3,702,597.

Elmo Company, Limited: *See—*
  Takeichi, Morio; and Ogura, Kazuhiko, 3,702,726.

Emhart Corporation: *See—*
  Johnson, Lloyd D.; Kroeber, Kenneth E.; and Raudat, John L., 3,702,524.

Emmons, William D.: *See—*
  Lewis, Sheldon N.; Merritt, Richard F.; and Emmons, William D., 3,702,799.

Epton, Roger: *See—*
  Barker, Sidney Alan; Somers, Peter John; and Epton, Roger, 3,702,804.

Erbert, Virgil, to United States of America, Atomic Energy Commission. Bimetallic temperature sensing device. 3,702,589, Cl. 102-70.000.

Erickson, Gerald L., to United States of America, Atomic Energy Commission. Dose rate dosimeter circuit. 3,702,936, Cl. 250-83.60r.

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Ermolenko, Igor Nikolaevich; Sviridova, Remma Nikolaevna; and Kuvaeva, Zoya Ivanovna, to Institut Obschei i Neorganicheskoi khimiii Akademii Nauk SSR. Pyrolytic carbon fiber. 3,702,832, Cl. 252-423.000.

Esso Production Research Company: *See—*
  Chenevert, Martin E., 3,702,564.
  Cunningham, Gerald Robert; and Wooddy, Lemuel Dale, Jr., 3,702,657.
  Hemstock, Russell A., 3,702,542.
  Matthews, Jamie F., Jr., 3,702,539.

Esso Research and Engineering Company: *See—*
  Bloch, Heinz P., 3,702,704.
  Buchmann, Fred J.; and Hamner, Glen P., 3,702,816.
  Metrailer, William J., 3,702,819.

Estes, John H.; Kravitz, Stanley; and Suggitt, Robert M., to Texaco Inc. Hydrocarbon conversion process. 3,702,874, Cl. 208-112.000.

Ethyl Corporation: *See—*
  Fadner, Thomas A.; and Kraske, Karl V., 3,702,779.

Ethylene-Plastique: *See—*
  Barozier, Jean-Pierre; and Nicco, Adrien, 3,702,782.

Ewald, Ronald F. Aerosol container. 3,702,669, Cl. 222-402.160.

Exton, John M.; trustee of the trust known for business purposes as the Exton Development Company: *See—*
  Stevens, Charles Edward, 3,702,496.

Eyelet Specialty Company: *See—*
  Landen, William James, 3,702,668.

Fadner, Thomas A.; and Kraske, Karl V., to Ethyl Corporation. Coating of webs by freeze-drying and products therefrom. 3,702,779, Cl. 117-102.00r.

Faget, Maxime A., to United States of America, National Aeronautics and Space Administration. Space shuttle vehicle and system. 3,702,688, Cl. 244-155.000.

Faith, Jack L.; Boysel, Lee L.; and Murphy, Joseph P., to Four-Phase Systems, Inc. MOS circuit with nodal capacitor predischarging means. 3,702,945, Cl. 307-251.000.

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Farr, John B., to Amoco Production Company. Seismic energy source using liquid explosive. 3,702,635, Cl. 166-299.000.

Fauth, Gunter; and Spinnler, Rainer, to Agfa-Gevaert Aktiengesellschaft. Printed circuit arrangement. 3,702,953, Cl. 317-101.0cp.

Fedders Corporation: *See—*
  Woehler, Harold L., 3,702,680.

Fenton, Donald M., to Union Oil Company of California. Preparation of alkyl halides, carboxylates and alcohols. 3,702,856, Cl. 260-410.90r.

Fernandez, Alberto Antonio, to Biochemical Procedures, Inc. Serum thyroxine anion exchange resin. 3,702,821, Cl. 210-37.

Ferro Corporation: *See—*
  Fuchsman, Charles H., 3,702,893.
  Hansen, Floyd R., 3,702,822.

Festner Consulting Associates, mesne: *See—*
  Festner, Theodor; Litwin, Theodore J.; and Preuss, Hans W., 3,702,796.

Festner, Theodor; Litwin, Theodore J.; and Preuss, Hans W., to Festner Consulting Associates, mesne. Machine for producing magnetic belt records. 3,702,796, Cl. 156-512.000.

Field Donald G., to Holland-Rantos Company, Inc. processing apparatus for liquid saturated towel packets. 3,702,584, Cl. 100-151.000.

Fields, Stanley A.; and Reynolds, John M., to United States of America, National Aeronautics and Space Administration. Device and method for determining X-ray reflection efficiency of optical surfaces. 3,702,933, Cl. 250-51.500.

Fillmore, Richard Plumb: *See—*
  Heuner, Robert Charles; and Fillmore, Richard Plumb, 3,702,943.

Fine, Richard A., to Norton Company. Removal of surface from boron carbide composite armor. 3,702,593, Cl. 109-80.000.

Finucane, Thomas P.; and Capasso, Philip J., to General Foods Corporation. Low calorie frozen desserts. 3,702,768, Cl. 99-136.000.

Fish Engineering & Construction Incorporated: *See—*
  Randall, Bill R.; and Gulsby, Jerry G., 3,702,541.

Fishbein, Meyer. Surgical expansive reamer for hip socket. 3,702,611, Cl. 128-305.000.

Flees, Peter: *See—*
  Stephens, Dennis T.; and Flees, Peter, 3,702,676.

Florida Juice Vendors, Inc.: *See—*
  Stano, Eugene A., 3,702,666.

Fluke, John, Mfg. Co., Inc.: *See—*
  Van Saun, Richard W., 3,703,002.

Flusfeder, Joseph; and Palmer, Leonard. Apparatus for manufacturing disc records. 3,702,749, Cl. 425-109.000.

Flynn, Terence David: *See—*
  Bent, Christopher James; Flynn, Terence David; and Glover, Brian, 3,702,752.

Follett, Archie E.: *See—*
  Glasgow, David Gerald; and Follett, Archie E., 3,702,839.

Ford Motor Company: *See—*

  Genyk, Walter; Martin, Raymond E.; Swift, George B.; Wiggins, Robert L.; and Wolfe, Raymond W., 3,702,510.
  Sobkow, William J., 3,702,706.

Four-Phase Systems, Inc.: *See—*
  Faith, Jack L.; Boysel, Lee L.; and Murphy, Joseph P., 3,702,945.

Fowler, Neal V., Jr.; Gallagher, Arthur P.; and Chance, Calvin L., Jr., to Vibration & Noise Engineering Corporation. Blow down quieter. 3,702,644, Cl. 181-50.000.

Fox, Charles H.: *See—*
  Ryburn, Kenneth D.; McClone, Robert J.; and Fox, Charles H., 3,702,715.

Franklin, Charles Henry: *See—*
  Rice, Edwin Eugene; and Franklin, Charles Henry, 3,702,519.

Franzen, Erwin F. Collapsible shelter for mounting on a transportation vehicle. 3,702,617, Cl. 135-1.00a.

Freche, John C.; Waters, William J.; and Ashbrook, Richard L., to United States of America, National Aeronautics and Space Administration. Method of forming superalloys. 3,702,791, Cl. 148-11.50r.

Frew, Ronald, to Colonial Sugar Refining Company, Limited, The. Particle separator. 3,702,527, Cl. 55-440.000.

Fried, John H.: *See—*
  Edwards, John A.; and Fried, John H., 3,702,853.

Fries, Hugo, to Pumpenfabrik Urach. Piston pump. 3,702,624, Cl. 137-512.000.

Fritsch, Rudolf P., to Scheer, C. F., & Cie. Multistage machine for the plastification and extrusion of synthetic plastic materials. 3,702,691, Cl. 259-192.000.

Fuchsman, Charles H., to Ferro Corporation. Method of repelling rodents using 2, 2-methylenelics (4,6-di-tert-butylresorcinol). 3,702,893, Cl. 424-346.000.

Fujimoto, Keimei: *See—*
  Kitamura, Shigeyoshi; Hirai, Hajime; Okuno, Yositosi; and Fujimoto, Keimei, 3,702,864.
  Mizutani, Toshio; Itaya, Nobushige; Kitamura, Shigeyoshi; Fujimoto, Keimei; and Okuno, Yositosi, 3,702,851.

Fujita, Saburo; Ban, Hiroshi; and Takikawa, Yukiro, to Aisin Seiki Kabushiki Kaisha. Clutch releasing device. 3,702,651, Cl. 192-70.250.

Fujitsu Limited: *See—*
  Sakai, Masaaki, 3,702,992.

Fukui, Sakae; and Kobayashi, Hisamine, to TDK Electronics Co., Ltd. Magnetic chips for barrel finishing and process for producing the same. 3,702,758, Cl. 51-298.000.

G-V Controls, Inc.: *See—*
  Gil, Ramon, 3,702,905.

Gallagher, Arthur P.: *See—*
  Fowler, Neal V., Jr.; Gallagher, Arthur P.; and Chance, Calvin L., Jr., 3,702,644.

Gamble, Edward R., to American Air Filter Company, Inc. Fire retardant container. 3,702,592, Cl. 109-29.000.

Gamer, Nicholas T.; and Richardson, James G., to Western Gold & Platinum Company. High temperature brazing alloy. 3,702,763, Cl. 75-173.00r.

Garland Steel Company: *See—*
  Howes, Leslie D., 3,702,594.

Garnier, Henri Louis, to Compagnie Francaise des Petroles. Electric generator drive. 3,702,938, Cl. 290-52.000.

Gebr. Kaiser, Maschinenfabrik: *See—*
  Storb, Uwe; Kaiser, Herbert; and Kaiser, Gunter, 3,702,748.

Gedgaudas, Mindaugas E.: *See—*
  Kazluaskas, Gasparas; and Gedgaudas, Mindaugas E., 3,702,913.

General Electric Company: *See—*
  Carson, Chester C.; Echeverria, Federico S.; and Barton, Sterling C., 3,702,561.
  Chace, Richard L.; and Haun, Burton O., 3,702,983.
  Donovan, Lawrence E., 3,702,963.
  Drexler, Karl F.; and Kudlacik, Henry W., 3,702,965.
  Hoffman, Herbert N., 3,702,719.
  Hoffman, Mary V., 3,702,828.
  Kudlacik, Henry W.; and Willyoung, David M., 3,702,964.
  Mason, Lowell M., 3,702,498.

General Foods Corporation: *See—*
  Finucane, Thomas P.; and Capasso, Philip J., 3,702,768.

General Kinetics, Inc.: *See—*
  Gutterman, Robert P.; and Washington, Le Baron H., 3,702,656.

General Motors Corporation: *See—*
  Gordon, Colin C.; and McGavic, John P., 3,702,601.

General Technologies Corporation: *See—*
  Withers, James C., 3,702,780.

Genyk, Walter; Martin, Raymond E.; Swift, George B.; Wiggins, Robert L.; and Wolfe, Raymond W., to Ford Motor Company. License plate support and pivotable cover member. 3,702,510, Cl. 40-209.000.

Gerken, George W.: *See—*
  Brady, Dale J.; and Gerken, George W., 3,702,563.

Gibson, Geoffrey M.: *See—*
  Farquhar, James G.; Gibson, Geoffrey M.; and Joice, Brian J., 3,702,784.

Giese, Emil; Maurer, Ruprecht; and Timtner, Karlheinz, to Ringspann Albrecht Maurer K.G. One-way clutch having tiltable sprags. 3,702,649, Cl. 192-41.00a.

Gil, Ramon, to G-V Controls, Inc. Multi-station shared automatic dialing apparatus. 3,702,905, Cl. 179-90.0bd.

Gilles, Jack C., to Goodrich, B. F., Company, The. Hydroxyphenylalkyleneyl isocyanurate synergist combinations. 3,702,837, Cl. 260-45.80n.

Glasgow, David Gerald; and Follett, Archie E., to Monsanto Research Corporation. Process for preparing 2-oxazolidone polymers. 3,702,839, Cl. 260-77.5ab.

Glemza, Rimantas: *See—*
  Rettew, Richard R.; Wirth, David G., Jr.; and Glemza, Rimantas, 3,702,882.

Glover, Brian: *See—*
  Bent, Christopher James; Flynn, Terence David; and Glover, Brian, 3,702,752.

Gobran, Ramsis: *See—*
  Ofstead, Ronald F.; and Gobran, Ramsis, 3,702,844.

Goettl, Adam D. Rotor for a blower structure. 3,702,741, Cl. 416-187.000.

Goldman, Irving M., to Pfizer, Inc. Process for making activated manganese dioxide. 3,702,889, Cl. 23-145.000.

Goodrich, B. F., Company, The: *See—*
  Diliddo, Bart A.; and Cinadr, Bernard F., 3,702,840.
  Gilles, Jack C., 3,702,837.
  Knechtges, Donald P.; and Mikofalvy, Bela K., 3,702,785.

Gordon, Colin C.; and McGavic, John P., to General Motors Corporation. Electronic fuel injection system. 3,702,601, Cl. 123-32.0ea.

Gorinas, Guy G.; and Regal, Jean C. A., to Societe Alsacienne de Constructions Atomiques de Telecommunications et d'Electronique Alcatel. Method for obtaining electrical connections, especially for microcircuits. 3,702,500, Cl. 29-628.000.

Goshima, Takeshi; Iwawaki, Yasutaka; and Yutaka, Kohtani, to Canon Kabushiki Kaisha. Magnetic recording-reproducing device capable of automatic repetitive reproduction. 3,702,506, Cl. 35-35.00c.

Gotz, Eckart: *See—*
  Wohr, Rolf; and Gotz, Eckart, 3,702,962.

Grace, W. R., & Co.: *See—*
  Dungan, Paul, 3,702,789.
  Rettew, Richard R.; Wirth, David G., Jr.; and Glemza, Rimantas, 3,702,882.
  Wessells, Forrest A.; and Gush, Donald P., 3,702,795.

Grace, W. R., and Co.: *See—*
  Tsuk, Andrew G.; and Kirk, Charles C., 3,702,800.

Gradisar, Ivan A. Partial weight bear warning device. 3,702,999, Cl. 340-272.000.

Graves, Kenneth E.: *See—*
  Porter, Lawrence C.; and Graves, Kenneth E., 3,702,747.

Greenberger, Joseph Irwin, to Wean United, Inc. Method of and apparatus for calendering strip-like material. 3,702,912, Cl. 219-10.610.

Greene, Clarence Kirk. Hydraulic drive for vehicles using hydraulic motors. 3,702,642, Cl. 180-44.00m.

Greenlee, Thomas W., to Dow Corning Corporation. Room temperature vulcanizable silicone elastomer containing molybdenum blue. 3,702,835, Cl. 260-18.00s.

Gregory, John W., to United States of America, National Aeronautics and Space Administration. Rocket thrust throttling system 3,702,536, Cl. 60-211.000.

Grimshaw, Frederick W. Heat exchanger core. 3,702,632, Cl. 165-152.000.

Grinups, George, to Unitec Industries, Inc. Refrigerator. 3,702,544, Cl. 62-414.000.

Group I-28, Incorporated: *See—*
  Wood, John W., Jr., 3,702,731.

GTE Sylvania Incorporated: *See—*
  Lucas, Raymond David, 3,702,998.

Gulf Oil Corporation: *See—*
  Neighbors, Ralph P., 3,702,863.

Gulf Research & Development Company: *See—*
  Hoffman, Otto L., 3,702,759.

Gulsby, Jerry G.: *See—*
  Randall, Bill R.; and Gulsby, Jerry G., 3,702,541.

Gush, Donald P.: *See—*
  Wessells, Forrest A.; and Gush, Donald P., 3,702,795.

Gutner, Kenneth H. Drawer guide. 3,702,717, Cl. 308-3.600.

Gutterman, Robert P.; and Washington, Le Baron H., to General Kinetics, Inc. Hydrodynamic mass sorting of fruits into classes according to specific gravity. 3,702,656, Cl. 209-156.000.

Haavaldsen, Johan: *See—*
  Salvesen, Sigbjorn; Haugen, Leif Gunnar; Haavaldsen, Johan; and Nordal, Vegard, 3,702,866.

Hadjigeorghiou, Andreas. Educational aid. 3,702,505, Cl. 35-34.000.

Hagarman, Paul O.: *See—*
  Dion, Paul A.; and Hagarman, Paul O., 3,702,497.

Hager, C., & Sons Hinge Manufacturing Company: *See—*
  Peterson, Francis C., 3,702,521.

Hahn, Walter: *See—*
  Nolte, Helmuth; Lindemann, Paul; and Hahn, Walter, 3,702,792.

Hall, Elmer Linwood; and Looby, John Thomas, to Du Pont de Nemours, E. I., and Company. Alkanolamine stabilized high solids titanium dioxide slurry. 3,702,773, Cl. 106-300.000.

Hall, Joseph J., to Johnson & Johnson. Winding device. 3,702,687, Cl. 242-56.900.

Hall, Thomas O., Jr.; and Peck, William G., to Bausch & Lomb Incorporated. Control system and code for a graphical plotting machine or like apparatus. 3,702,922, Cl. 235-61.60r.

Hallenrud, Sven Josef Harry: *See—*

Lindahl, Bo Oscar; Lamme, Seth Eric Valentin; and Hallenrud, Sven Josef Harry, 3,702,734.
Haller, James R., to Minnesota Mining and Manufacturing Company. Insulated electrical conductors coated with polyimide-amide modified polyimide. 3,702,788, Cl. 117-230.000.
Hallerback, Stig Lennart, to SKF Industrial Trading and Development Company, N.V. Device for the application of rolling bearings. 3,702,720, Cl. 308-236.000.
Halliburton Company: *See—*
Anderson, Merlin F.; and Perkins, Lee E., 3,702,634.
Hallmark Cards, Incorporated: *See—*
Renoe, Ronald R., 3,702,495.
Halverson, Steven L.: *See—*
Moses, Harry; Eggenberger, Delbert N.; Halverson, Steven L.; and Managan, William W., 3,702,565.
Hamner, Glen P.: *See—*
Buchmann, Fred J.; and Hamner, Glen P., 3,702,816.
Hamuro, Keizo, to Sumitomo Chemical Company, Ltd. Insecticidal composition comprising a synergistic mixture of 5-benzyl-3-furylmethyl D trans-chrysanthemate and N(3,4,5,6-tetrahydrophthalimido)-methyl D-trans-chrysanthemate. 3,702,891, Cl. 424-274.000.
Haney, Ralph D.; Zachar, James E.; and Drozd, Charles J., to National Cash Register Company, The. Digital processor. 3,702,988, Cl. 340-172.500.
Hansen, Donald E.: *See—*
Kaplan, Martin; Hansen, Donald E.; and Quist, Eric G., 3,703,000.
Hansen, Floyd R., to Ferro Corporation. Extreme pressure lubricant additives. 3,702,822, Cl. 252-37.000.
Hargrave, Richard D.: *See—*
Vaughn, George A.; and Hargrave, Richard D., 3,702,701.
Harris, Walter L.: *See—*
Bright, Charles R.; and Harris, Walter L., 3,702,600.
Harris-Intertype Corporation: *See—*
Kolb, Edwin R., 3,702,949.
Hart, John M., to Unarco Industries, Inc. Antifreeze system for rack sprinkler building. 3,702,636, Cl. 169-2.00r.
Hartlein, Robert C. Epoxy silane coupling agents. 3;702,783, Cl. 117-126.0gs.
Hartlein, Robert C., to Dow Corning Corporation. Method of improving the adhesion of a siliceous material and a polyolefin using a silane and a chlorinated organic compound. 3,702,794, Cl. 156-310.000.
Hartley, Irby Ennis, Jr., to Du Pont de Nemours, E. I., and Company. Method for ring winding yarn on a package and apparatus thereof. 3,702,528, Cl. 57-75.000.
Hartman, Donald A.: *See—*
Cassidy, Glenn; Hartman, Donald A.; Hentz, Lyle J.; and Horn, William D., 3,702,952.
Hasbrouck, Augustus; and Lauck, Lawrence J., to United Aircraft Corporation. Blow-in-door actuation for afterburner nozzle. 3,702,681, Cl. 239-265.370.
Hasselbeck, Richard J.; and Kaminski, Elton G., to Stolle Corporation. Can body making machine. 3,702,559, Cl. 72-345.000.
Hatat, Kazumi: *See—*
Kodama, Hisashi; Sekigawa, Tsuneo; Hatat, Kazumi; and Nakaya, Akimichi, 3,702,538.
Hataya, Yukio: *See—*
Sawairi, Hitoshi; Kurihara, Yoshio; Takahashi, Kazuhiko; Hayakawa, Yoshihiko; and Hataya, Yukio, 3,702,968.
Hathaway, Robert J., to Staley, A. E., Manufacturing Company. Preparation of carboxyhydroxy alkyl starch derivatives. 3,702,847, Cl. 260-233.30r.
Hattori, Atsushi: *See—*
Ishibashi, Keijiro; Okaniwa, Tokio; Hattori, Atsushi; and Arai, Masetoshi, 3,702,805.
Haubein, Albert H., to Hercules Incorporated. Use of 2,6-di-tert-butyl-4-methylphenyl N-dichloroacetyl-N-methylcarbamate as a herbicide. 3,702,760, Cl. 71-106.000.
Haugen, Leif Gunnar: *See—*
Salvesen, Sigbjorn; Haugen, Leif Gunnar; Haavaldsen, Johan; and Nordal, Vegard, 3,702,866.
Haun, Burton O.: *See—*
Chace, Richard L.; and Haun, Burton O., 3,702,983.
Hauser, Fred. Sprinkler. 3,702,678, Cl. 239-206.000.
Hayakawa, Yoshihiko: *See—*
Sawairi, Hitoshi; Kurihara, Yoshio; Takahashi, Kazuhiko; Hayakawa, Yoshihiko; and Hataya, Yukio, 3,702,968.
Health Systems, Inc.: *See—*
Panico, Joseph; and Lopin, Michael, 3,702,613.
Heffington, Thomas E. Animal repellant pack. 3,702,677, Cl. 239-55.000.
Heflinger, Lee Opert, to TRW Inc. Holographic interferometric system for generating finite fringes. 3,702,738, Cl. 356-109.000.
Hegeman, Rutledge G.; and Moyer, James D., to North American Rockwell Corporation. Pattern mechanism for knitting machines. 3,702,548, Cl. 66-154.00r.
Hemstock, Russell A., to Esso Production Research Company. Ice control about marine structures. 3,702,542, Cl. 62-66.000.
Henderson, William Leland: *See—*
Sheppard, Milton R .; and Henderson, William Leland, 3,702,610.
Hengelhaupt, Hans-Georg; and Teichmann, Friedrich, to Triumph Werke Nuernberg A.G. Device to cast off wound ribbon from a spool. 3,702,652, Cl. 197-151.000.
Hennig, Fridolin: *See—*
Kremp, Rudolf; and Hennig, Fridolin, 3,702,727.
Kremp, Rudolf; Winkler, Alfred; and Hennig, Fridolin, 3,702,729.
Hensarling, Thomas P.: *See—*
Yatsu, Lawrence Y.; Jacks, Thomas J.; and Hensarling, Thomas P., 3,702,857.
Hentz, Lyle J.: *See—*
Cassidy, Glenn; Hartman, Donald A.; Hentz, Lyle J.; and Horn, William D., 3,702,952.
Hercules Incorporated: *See—*
Haubein, Albert H., 3,702,760.
Herman, Elvin E.; Lym, Vernon W.; and McCord, Henry L., to Hughes Aircraft Company. Radar signal phase correction. 3,703,005, Cl. 343-17.100.
Herolzer, Ralph H., to Vanguard Industries, Inc. Shellfish growout tray. 3,702,599, Cl. 119-4.000.
Hess, Hans-Jurgen E.: *See—*
Cronin, Timothy H.; and Hess, Hans-Jurgen E., 3,702,849.
Heuner, Robert Charles; and Fillmore, Richard Plumb, to RCA Corporation. Field-effect transistor circuit for detecting changes in voltage level. 3,702,943, Cl. 307-235.000.
Hibbs, Eugene B., Jr. Analog to digital converter. 3,703,001, Cl. 340-347.0ad.
Hidaka, Tsuneyoshi; and Honjo, Yoshihiko, to Victor Company of Japan, Ltd. Hue control circuit for color video signal. 3,702,897, Cl. 178-5.4he.
Higgins, William T., to Kelsey-Hayes Company. Winch launch system. 3,702,690, Cl. 254-187.000.
Hill, Fred, & Son Company: *See—*
Shaw, Kenneth, 3,702,645.
Hino, Naganori: *See—*
Mine, Akihiko; Kamoshita, Katsuzo; Hino, Naganori; and Nakai, Shinji, 3,702,862.
Hirai, Hajime: *See—*
Kitamura, Shigeyoshi; Hirai, Hajime; Okuno, Yositosi; and Fujimoto, Keimei, 3,702,864.
Hiyama, Yasuo: *See—*
Seki, Toshio; Hiyama, Yasuo; and Sato, Yoshitaka, 3,702,858.
Hodshire, Vincent B. Fish catching instrumentality. 3,702,512, Cl. 43-15.000.
Hoffman, Herbert N., to General Electric Company. Integrated journal and thrust bearing. 3,702,719, Cl. 308-160.000.
Hoffman, Mary V., to General Electric Company. Europium-activated barium and strontium, calcium aluminum fluoride phosphors. 3,702,828, Cl. 252-301.40r.
Hoffman, Otto L., to Gulf Research & Development Company. Herbicide resistant corn seed method. 3,702,759, Cl. 71-77.000.
Holland-Rantos Company, Inc.: *See—*
Field Donald G., 3,702,584.
Holler, Ernst: *See—*
Sennewald, Kurt; Wesselmann, Rudolf; Holler, Ernst; and Muller, Heinz, 3,702,887.
Honeywell Information Systems, Inc.: *See—*
Aguirre, Michael C., 3,702,942.
Honjo, Yoshihiko: *See—*
Hidaka, Tsuneyoshi; and Honjo, Yoshihiko, 3,702,897.
Hooker Chemical Corporation: *See—*
Wagner, George M., 3,702,776.
Hoover Ball and Bearing Company: *See—*
Stephens, Dennis T.; and Flees, Peter, 3,702,676.
Horizons Incorporated: *See—*
Rose, Selwyn H.; and Reynard, Kennard A., 3,702,833.
Horn, William D.: *See—*
Cassidy, Glenn; Hartman, Donald A.; Hentz, Lyle J.; and Horn, William D., 3,702,952.
Hough, William T. Solvent extraction into comestible solute. 3,702,820, Cl. 210-22.000.
Hoult, J. A., Enterprises Limited: *See—*
Hoult, John A., 3,702,702.
Hoult, John A., to Hoult, J. A., Enterprises Limited. Lacrosse stick. 3,702,702, Cl. 273-96.00d.
House, John I. Rearview mirror. 3,702,535, Cl. 60-54.50r.
Howe, Edwin W. Gyroscopes and suspensions therefor. 3,702,568, Cl. 74-5.000.
Howe, Robert K., to Monsanto Company. Preparation of n-alkyl anilino-methylenemalonvitrile. 3,702,861, Cl. 260-465.00e.
Howell, Harold D.; Hunter, Thomas O.; and Stinebaugh, Robert E., to United States of America, Atomic Energy Commission. Actuator system. 3,702,620, Cl. 137-68.000.
Howes, Leslie D., 50% to Garland Steel Company. System for controlling the burning or stock piling of refuse according to operating conditions of an incinerator. 3,702,594, Cl. 110-8.00r.
Huber, William C.; and Ritter, Dale L., said Huber assor. to United States of America, National Aeronautics and Space Administration. Foldable construction block. 3,702,520, Cl. 52-284.000.
Huebotter, Paul R., to United States of America, Atomic Energy Commission. Fuel assembly for a fast reactor. 3,702,803, Cl. 176-40.000.
Hughes Aircraft Company: *See—*
Herman, Elvin E.; Lym, Vernon W.; and McCord, Henry L., 3,703,005.
Hujsak, Karol L.: *See—*
Hunt, Elton B., Jr.; and Hujsak, Karol L., 3,702,884.
Hunt, Elton B., Jr.; and Hujsak, Karol L., to Amoco Production Company. Method for reducing sulfur compounds in sulfur plant effluent. 3,702,884, Cl. 423-222.000.
Hunter, Thomas O.: *See—*

Howell, Harold D.; Hunter, Thomas O.; and Stinebaugh, Robert E., 3,702,620.
Huver, Lawrence L.: *See—*
Quinlan, William J.; and Huver, Lawrence L., 3,702,490.
Hydrocarbon Research, Inc.: *See—*
Newberger, Bernard I., 3,702,873.
IIT Research Institute: *See—*
Camras, Marvin, 3,702,906.
Iliopulos, Miltiadis I.: *See—*
Bredereck, Hellmut F. I.; Iliopulos, Miltiadis I.; and Wieder, Horst F., 3,702,879.
Illinois Tool Works Inc.: *See—*
Pelletiere, Thomas James, 3,702,491.
Imperial Chemical Industries, Limited: *See—*
Bent, Christopher James; Flynn, Terence David; and Glover, Brian, 3,702,752.
Birchall, James Derek; and Cassidy, John Edward, 3,702,774.
Walbridge, Derek John, 3,702,836.
Institut de Recherches de la Siderurgie Francaise: *See—*
Rouanet, Jean, 3,702,695.
Institut Ohschei i Neorganicheskoi khimiii Akademii Nauk SSR: *See—*
Ermolenko, Igor Nikolaevich; Sviridova, Remma Nikolaevna; and Kuvaeva, Zoya Ivanovna, 3,702,832.
International Business Machines Corporation: *See—*
Picciano, James K.; and Zauchner, Joseph, 3,702,926.
International Nickel Company, Inc., The: *See—*
Llewelyn, David Myers, 3,702,761.
International Standard Electric Corporation: *See—*
Maillot, Jean Paul, 3,702,969.
International Telephone and Telegraph Corporation: *See—*
Kelly, Joseph Francis; and Prow, Harold James, Jr., 3,702,982.
International Telephone and Telegraph Corporation, mesne: *See—*
Russell, Linus E., 3,702,742.
Iroquois Promotion: *See—*
Miller, Murray Edwin, 3,702,511.
Ishibashi, Keijiro; Okaniwa, Tokio; Hattori, Atsushi; and Arai, Masetoshi, to Sankyo Company, Limited. Process for the production of a dextran-degrading enzyme. 3,702,805, Cl. 195-66.00r.
Itaya, Nobushige: *See—*
Mizutani, Toshio; Itaya, Nobushige; Kitamura, Shigeyoshi; Fujimoto, Keimei; and Okuno, Yositosi, 3,702,851.
ITT Industries: *See—*
Oberthur, Heinrich, 3,702,713.
ITT Industries, Inc.: *See—*
Schilling, Harald, 3,702,947.
Iwawaki, Yasutaka: *See—*
Goshima, Takeshi; Iwawaki, Yasutaka; and Yutaka, Kohtani, 3,702,506.
Jachacz, Edmund A.: *See—*
Barmasse, Alfred C.; and Jachacz, Edmund A., 3,702,486.
Jacks, Thomas J.: *See—*
Yatsu, Lawrence Y.; Jacks, Thomas J.; and Hensarling, Thomas P., 3,702,857.
Jacobsen, Jac., to Jacobsen, Jac., A/S. Device made from insulating material for electrical insulation of a switch in a work-lamp shield. 3,702,931, Cl. 240-122.000.
Jacobsen, Jac., A/S: *See—*
Jacobsen, Jac., 3,702,931.
Jacobson, Howard C. Air valve structure for hammermill. 3,702,686, Cl. 241-59.000.
Jacoby-Bender, Incorporated: *See—*
Luft, Walter, 3,702,670.
Jakobsen, Niels, to Picker-Andrex X-Ray A/S. Apparatus for controlling equipment on a crawler displaceable inside a pipe. 3,702,934, Cl. 250-52.000.
Jamieson, John W., to Diablo Systems, Inc. Headloading system for magnetic memory disk drives. 3,702,997, Cl. 340-174.10e.
Jansen, George, Jr., to United States of America, Atomic Energy Commission. Nuclear reactor incorporating means for preventing molten fuel from breaching the containment vessel thereof in the event of a core. 3,702,802, Cl. 176-38.000.
Joe, Edwin Glendon: *See—*
Craigne, William J. S.; Ritcey, Gordon M.; Joe, Edwin Glendon; Melvanin, William; and Smart, Bruce C., 3,702,883.
Joel, Henry G., to Olivetti, Ing. C., & C., S.p.A. Remote illuminating apparatus. 3,702,930, Cl. 240-41.35r.
Joele, Hector, to Cincinnati Milacron Inc. Hopper feed device. 3,702,663, Cl. 221-167.000.
Johnson & Johnson: *See—*
Hall, Joseph J., 3,702,687.
Johnson, Charles W.; d/b/a Putter-Craft Company: *See—*
Budois, Clairo O., 3,702,703.
Johnson, Lloyd D.; Kroeber, Kenneth E.; and Raudat, John L., to Emhart Corporation. Case loader with article inverting mechanism. 3,702,524, Cl. 53-61.000.
Johnson, Ralph W.: *See—*
Tucker, Roy G.; Blasenak, David H.; and Johnson, Ralph W., 3,702,607.
Joice, Brian J.: *See—*
Farquhar, James G.; Gibson, Geoffrey M.; and Joice, Brian J., 3,702,784.
Jones, Don R., to Silicon Technology Corporation. Work mounting mechanism in slicing machine. 3,702,604, Cl. 125-14.000.
Jurd, Leonard. Synthesis of 2-phenyl benzofurans. 3,702,854, Cl. 260-346.20r.
Kabushikikaisha Nakatani: *See—*
Kasahara, Yasuo, 3,702,980.
Kaiser, Gunter: *See—*
Storb, Uwe; Kaiser, Herbert; and Kaiser, Gunter, 3,702,748.
Kaiser, Herbert: *See—*
Storb, Uwe; Kaiser, Herbert; and Kaiser, Gunter, 3,702,748.
Kalb, Jeffrey C.; and Widlar, Robert J., to National Semiconductor Corporation. Multiple emitter transistor apparatus. 3,702,955, Cl. 317-235.00r.
Kaminski, Elton G.: *See—*
Hasselbeck, Richard J.; and Kaminski, Elton G., 3,702,559.
Kamoshita, Katsuzo: *See—*
Mine, Akihiko; Kamoshita, Katsuzo; Hino, Naganori; and Nakai, Shinji, 3,702,862.
Kaneko, Tamaki; and Mizuno, Katsumi, to Ricoh Co., Ltd. Device for switching between automatic and non-automatic master plate feeding and removing operations for offset printing machines. 3,702,586, Cl. 101-142.000.
Kanto Seiki Co., Limited: *See—*
Shimizu, Yasushi, 3,702,550.
Kaplan, Martin; Hansen, Donald E.; and Quist, Eric G., to Mosler Research Products, Inc. Security alarm system. 3,703,000, Cl. 340-276.000.
Kasahara, Yasuo, 50% to Kabushikikaisha Nakatani. Circuit breaker. 3,702,980, Cl. 335-16.000.
Kasper, Joseph G., to Tennant Company. Scrubbing machine. 3,702,488, Cl. 15-50.00c.
Kawai, Hisasi: *See—*
Wakamatsu, Hisato; Kitano, Akira; and Kawai, Hisasi, 3,702,572.
Kawakami, Heijiro: *See—*
Nakamura, Yoshimi; and Kawakami, Heijiro, 3,702,489.
Kawamoto, Hiroshisa; and Allen, Elmer Lawrence, Jr., to RCA Corporation. Broadband microwave apparatus using multiple avalanche diodes operating in the anomalous mode. 3,702,971, Cl. 330-57.000.
Kazlauskas, Gasparas: *See—*
Vilkas, Eugene P.; and Kazlauskas, Gasparas, 3,702,915.
Kazluaskas, Gasparas; and Gedgaudas, Mindaugas E., to Astro-Arc Company. Welding head supporting apparatus. 3,702,913, Cl. 219-60.00a.
Kelleher, Thomas E. Press brake gauge. 3,702,502, Cl. 33-185.00r.
Kelly, Joseph Francis; and Prow, Harold James, Jr., to International Telephone and Telegraph Corporation. Flat cable connector. 3,702,982, Cl. 339-99.00r.
Kelsey-Hayes Company: *See—*
Higgins, William T., 3,702,690.
Kennametal, Inc.: *See—*
Nemeth, Bela J., 3,702,573.
Kennecott Copper Corporation: *See—*
Redman, Michael J., 3,702,888.
Kewanee Machinery & Conveyor Co.: *See—*
Womble, George E.; and Cleveland, Rex, 3,702,639.
Khomyakov, Viktor Stepanovich: *See—*
Nififorov, Vladimir Pavlovich; Zaitsev, Vasily Nikolaevich; Khomyakov, Viktor Stepanovich; Kil, Ilia Genrikhovich; and Tsybukov, Igor Kirillovich, 3,702,815.
Kil, Ilia Genrikhovich: *See—*
Nififorov, Vladimir Pavlovich; Zaitsev, Vasily Nikolaevich; Khomyakov, Viktor Stepanovich; Kil, Ilia Genrikhovich; and Tsybukov, Igor Kirillovich, 3,702,815.
Kim, Yung Ki. Fluorosilicone lubricants containing 2-nitromesitylene. 3,702,823, Cl. 252-49.600.
Kimberly-Clark Corporation: *See—*
Sheppard, Milton R .; and Henderson, William Leland, 3,702,610.
Kinjo, Kikuo; Yamanouchi, Teruo; Kondo, Eiichi; Matsuno, Hiroshi; and Nishide, Katsuhiko, to Canon Kabushiki Kaisha. Chlorine and iodine containing poly-9-vinylcarbazole electrophotographic polymers. 3,702,764, Cl. 96-1.500.
Kirchem, Heinz; and Portz, Wilhelm, to Knapsack Aktiengesellschaft Process and instrument for measuring the length of a hollow electrode in an electrothermal melting furnace. 3,702,894, Cl. 13-1.000.
Kirk, Charles C.: *See—*
Tsuk, Andrew G.; and Kirk, Charles C., 3,702,800.
Kirschke, John A. Sewer cleaning chemical dispensing nozzle. 3,702,685, Cl. 239-533.000.
Kish, Donald Eugene; and Smith, James Lanson, to Bell Telephone Laboratories, Incorporated. Domain propagation arrangement. 3,702,994, Cl. 340-174.0tf.
Kitamura, Shigeyoshi: *See—*
Mizutani, Toshio; Itaya, Nobushige; Kitamura, Shigeyoshi; Fujimoto, Keimei; and Okuno, Yositosi, 3,702,851.
Kitamura, Shigeyoshi; Hirai, Hajime; Okuno, Yositosi; and Fujimoto, Keimei, to Sumitomo Chemical Company, Ltd. Allyl or propargyl esters of substituted α-phenyl-phenyl acetic acid. 3,702,864, Cl. 06/09/72.
Kitano, Akira: *See—*
Wakamatsu, Hisato; Kitano, Akira; and Kawai, Hisasi, 3,702,572.
Knapsack Aktiengesellschaft: *See—*
Kirchem, Heinz; and Portz, Wilhelm, 3,702,894.
Sennewald, Kurt; Wesselmann, Rudolf; Holler, Ernst; and Muller, Heinz, 3,702,887.

Knechtges, Donald P.; and Mikofalvy, Bela K., to Goodrich, B. F., Company, The. Low-temperature curable articles. 3,702,785, Cl. 117-155.0ua.

Kobayashi, Hisamine: *See—*
Fukui, Sakae; and Kobayashi, Hisamine, 3,702,758.

Kobe Steel, Ltd.: *See—*
Nakamura, Yoshimi; and Kawakami, Heijiro, 3,702,489.

Koceich, Mark J.; and Chirash, William, to Colgate-Palmolive Company. Scouring cleanser. 3,702,826, Cl. 252-99.000.

Kodama, Hisashi; Sekigawa, Tsuneo; Hatat, Kazumi; and Nakaya, Akimichi, to Nippon Kokan Kabushiki Kaisha. Partitions in docks. 3,702,538, Cl. 61-64.000.

Koechner, Walter; Rice, Dennis Keith; and De Shazer, Larry Grant, to Union Carbide Corporation. Reduction of thermally induced stress birefringence in a synthetic crystal by control of growth direction. 3,702,974, Cl. 331-94.50t.

Kohno, Shigeharu; Komaki, Tatsuo; and Watanabe, Hideaki, to Eisai Co., Ltd. 4-Aminomethyl. 3,702,867, Cl. 260-514.00r.

Kolb, Edwin R., to Harris-Intertype Corporation. Compensation systems for cathode ray tube display systems. 3,702,949, Cl. 315-22.000.

Komaki, Tatsuo: *See—*
Kohno, Shigeharu; Komaki, Tatsuo; and Watanabe, Hideaki, 3,702,867.

Komatsu, Hideo: *See—*
Oda, Naoteru; Nishimura, Seiichi; and Komatsu, Hideo, 3,702,694.

Kondo, Eiichi: *See—*
Kinjo, Kikuo; Yamanouchi, Teruo; Kondo, Eiichi; Matsuno, Hiroshi; and Nishide, Katsuhiko, 3,702,764.

Kosmahl, Henry G., to United States of America, National Aeronautics and Space Administration. Electrostatic collector for charged particles. 3,702,951, Cl. 315-5.380.

Kraakman, Hillebrand Johannes Josephus, to U.S. Philips Corporation. Fluid-controlled selection system. 3,702,909, Cl. 200-83.00r.

Kraft, Wolfgang, to Siemens Aktiengesellschaft. Circuits for regulating a current. 3,702,946, Cl. 307-297.000.

Krahnke, Robert H. Urea-functional organosilicon compounds. 3,702,860, Cl. 260-448.80r.

Kraske, Karl V.: *See—*
Fadner, Thomas A.; and Kraske, Karl V., 3,702,779.

Kravitz, Stanley: *See—*
Estes, John H.; Kravitz, Stanley; and Suggitt, Robert M., 3,702,874.

Kremp, Rudolf; and Hennig, Fridolin, to Agfa-Gevaert Aktiengesellschaft. Motion picture projector with magazine for film-containing cassettes. 3,702,727, Cl. 352-123.000.

Kremp, Rudolf; Winkler, Alfred; and Hennig, Fridolin, to Agfa-Gevaert Aktiengesellschaft. Motion picture projector for use with film-containing cassettes. 3,702,729, Cl. 352-123.000.

Kroeber, Kenneth E.: *See—*
Johnson, Lloyd D.; Kroeber, Kenneth E.; and Raudat, John L., 3,702,524.

Kudlacik, Henry W.: *See—*
Drexler, Karl F.; and Kudlacik, Henry W., 3,702,965.

Kudlacik, Henry W.; and Willyoung, David M., to General Electric Company. Internal static excitation system for a dynamoelectric machine. 3,702,964, Cl. 322-59.000.

Kurahashi, Koichiro; Nakada, Masanori; Abe, Masaaki; and Nishimura, Koichi, to Mitsubishi Electric Corporation. Video information recording media and apparatus for reproducing video information. 3,702,896, Cl. 178-5.20r.

Kurihara, Yoshio: *See—*
Sawairi, Hitoshi; Kurihara, Yoshio; Takahashi, Kazuhiko; Hayakawa, Yoshihiko; and Hataya, Yukio, 3,702,968.

Kuvaeva, Zoya Ivanovna: *See—*
Ermolenko, Igor Nikolaevich; Sviridova, Remma Nikolaevna; and Kuvaeva, Zoya Ivanovna, 3,702,832.

Laakso, Thomas M., to Eastman Kodak Company. Alkali-soluble light sensitive polymers and compositions and processes for using such polymers. 3,702,765, Cl. 96-33.000.

L'Air Liquide Societe Anonyme pour l'Etude et et l'Exploitation des Procedes Georges Claude: *See—*
Renard, Michel; Cardinne, Philippe; and Manhes, 3,702,956.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Simonet, Guy A.; and Lesur, Pierre F., 3,702,525.

Lamme, Seth Eric Valentin: *See—*
Lindahl, Bo Oscar; Lamme, Seth Eric Valentin; and Hallenrud, Sven Josef Harry, 3,702,734.

Land, Cecil E.; and Smith, Willis D., to United States of America, Atomic Energy Commission. Ferroelectric ceramic plate electro-optical light scattering device and method. 3,702,724, Cl. 350-160.000.

Landen, William James, to Eyelet Specialty Company. Safety device for an aerosol or the like dispensing container. 3,702,668, Cl. 222-182.000.

Landers, Don B., to Oil States Rubber Company. Grouting seal for piling. 3,702,537, Cl. 61-46.500.

Landis, Donald E.; and Sidhu, Mohanjit S., to National Cash Register Company, The. Printing mechanism producing a rubbing action. 3,702,585, Cl. 101-1.000.

Landolt, George R.: *See—*
Argauer, Robert J.; and Landolt, George R., 3,702,886.

Larker, Hans; and Nilsson, Jan, to Allmanna Svenska Elektriska Aktiebolaget. Press for hot hydrostatic extrusion. 3,702,555, Cl. 72-60.000.

Larker, Hans; and Nilsson, Jan, to Allmanna Svenska Elektriska Aktiebolaget. Method of hydrostatic extrusion. 3,702,556, Cl. 72-60.000.

LaSharma, Roshan, to Collins Radio Company. Algorithm for synthesizing economical data communication network. 3,703,006, Cl. 444-1.000.

Lauck, Lawrence J.: *See—*
Hasbrouck, Augustus; and Lauck, Lawrence J., 3,702,681.

Lawsser, Claude: *See—*
Besson, Rene; Lawsser, Claude; and Rochat, Daniel, 3,702,530.

Le Gloan, Andre, to Societe d'Etudes dè Brevets et d'Applications Technologiques, (S.E.B.A.T.). Electric control mounting, notably for motorize lift truck. 3,702,959, Cl. 318-139.000.

Lee, Bert Leonard, to North American Rockwell Corporation. Electronic control system for adjustment of ink fountain in a printing press. 3,702,587, Cl. 101-207.000.

Lee, John W.: *See—*
Michaels, Edwin B.; and Lee, John W., 3,702,871.

Leroy, Jean L., to Metallurgie Hoboken-Overpelt. Method for the continuous hot shaping of copper bars. 3,702,629, Cl. 164-76.000.

Lescoa, Inc.: *See—*
Tassell, Donald E.; and Middleton, Forest L., 3,702,718.

Lesur, Pierre F.: *See—*
Simonet, Guy A.; and Lesur, Pierre F., 3,702,525.

Leutwein, Manfred; and Streicher, Heinz, to Eastman Kodak Company. Handling device for information carrying sheets. 3,702,697, Cl. 271-3.000.

Leveskis, Newton G.; and Abma, Charles B., to Argus Chemical Corporation. Non-hazardous ketone peroxide compositions. 3,702,869, Cl. 260-61.0oa.

Levine, Martin W.: *See—*
United States of America, National Aeronautics and Space Administration, 3,702,972.

Lewis, Sheldon N.; Merritt, Richard F.; and Emmons, William D., to Rohm and Haas Company. Polymers of quaternary ammonium compounds used as wet strength agents in paper. 3,702,799, Cl. 162-168.000.

Lindahl, Bo Oscar; Lamme, Seth Eric Valentin; and Hallenrud, Sven Josef Harry, to Saab-Scania Aktienbolag. Calibration means for instrument for reading dust accumulations on dark slides. 3,702,734, Cl. 356-38.000.

Lindemann, Paul: *See—*
Nolte, Helmuth; Lindemann, Paul; and Hahn, Walter, 3,702,792.

Litton Medical Products, Inc.: *See—*
Carey, Lewis S.; and Mansour, George L., 3,702,935.

Litwin, Theodore J.: *See—*
Festner, Theodor; Litwin, Theodore J.; and Preuss, Hans W., 3,702,796.

Llewelyn, David Myers, to International Nickel Company, Inc., The. Carbonyl nickel powder and production thereof. 3,702,761, Cl. 75-.5aa.

Locking Devices, Inc.: *See—*
Moore, Donald B., 3,702,708.

Looby, John Thomas: *See—*
Hall, Elmer Linwood; and Looby, John Thomas, 3,702,773.

Lopin, Michael: *See—*
Panico, Joseph; and Lopin, Michael, 3,702,613.

L'Oreal: *See—*
Netter, Pierre, 3,702,508.

Lotesto, Umberto. Two stroke rotary combustion engine. 3,702,602, Cl. 123-45.00r.

Lowry, Robert Arthur, Jr.; and Smith, Billy Eual, to Motorola, Inc. Method of forming ohmic contact for semiconducting devices. 3,702,787, Cl. 117-213.000.

Lucas, Raymond David, to GTE Sylvania Incorporated. Method and apparatus for operating a single sensor to have the properties of an array of sensors. 3,702,998, Cl. 340-258.00r.

Luckenbach, Edward C. Esso Research and Engineering Company Gaseous products of gasifier used to convey coke to heater. 3,702,516, Cl. 48-206.000.

Luft, Walter, to Jacoby-Bender, Incorporated. Mesh bracelet for wrist watch band. 3,702,670, Cl. 224-4.00d.

Lukas, Josef: *See—*
Schilling, Werner; and Lukas, Josef, 3,702,582.

Lutz, Gerhard: *See—*
Mosch, Willi; Lutz, Gerhard; Putter, Lothar; Waldkotter, Erich; and Martin, Heinz, 3,702,954.

Lym, Vernon W.: *See—*
Herman, Elvin E.; Lym, Vernon W.; and McCord, Henry L., 3,703,005.

Lyman, John B., to Whirlpool Corporation. Ice making apparatus. 3,702,543, Cl. 62-354.000.

M & T Chemicals, Inc.: *See—*
Bedi, Ram Dev, 3,702,809.

Maark Corporation: *See—*
Vaughn, George A.; and Hargrave, Richard D., 3,702,701.

Mabeg-Maschinenbau G.m.b.H.: *See—*
Schwebel, Adolf, 3,702,698.

Macintyre, John S.: *See—*
Wiesler, Mordechai; Martinonis, Virgil; and Macintyre, John S., 3,702,923.

Macovski, Albert, to RCA Corporation. Decoding of color-encoded phase grating. 3,702,725, Cl. 350-162.0sf.

Maid-Mar Industries, Inc.: *See—*
Miller, Richard, 3,702,614.

Maillot, Jean Paul, to International Standard Electric Corporation. Power supply circuit for continuous-wave magnetron. 3,702,969, Cl. 328-230.000.

Malmstrom Chemical Corporation: *See—*
Richey, Thomas B.; and Spilker, Clarence W., 3,702,772.

Managan, William W.: *See—*
Moses, Harry; Eggenberger, Delbert N.; Halverson, Steven L.; and Managan, William W., 3,702,565.
Trabbic, Geraldw.; 11/14/72; and Managan, William W., 3,704,588.

Mancini, Ronald Alfred: *See—*
Aiduck, Carl Joseph; and Mancini, Ronald Alfred, 3,702,941.

Mandroian, Harold, to Atek Industries, Inc. Electrolytic recovery cell. 3,702,814, Cl. 204-237.000.

Manhes: *See—*
Renard, Michel; Cardinne, Philippe; and Manhes, 3,702,956.

Manning, Harold E.; Woskow, Marvin Z.; and Christmann, Harold F., to Petro-Tex Chemical Corporation. Modification of oxidative dehydrogenation catalysts. 3,702,875, Cl. 260-680.00e.

Mansour, George L.: *See—*
Carey, Lewis S.; and Mansour, George L., 3,702,935.

Margavio, Matthew F.: *See—*
Vigo, Tyrone L.; Margavio, Matthew F.; and Welch, Clark M., 3,702,754.

Markey, Joseph W., to Cities Service Company. Phosphoric acid process. 3,702,885, Cl. 23-165.000.

Marshall, Claude J., to North American Rockwell Corporation. Wheel cover balancing apparatus and method. 3,702,567, Cl. 73-487.000.

Martin, Heinz: *See—*
Mosch, Willi; Lutz, Gerhard; Putter, Lothar; Waldkotter, Erich; and Martin, Heinz, 3,702,954.

Martin, Raymond E.: *See—*
Genyk, Walter; Martin, Raymond E.; Swift, George B.; Wiggins, Robert L.; and Wolfe, Raymond W., 3,702,510.

Martin, Robert I. Plastic door frame. 3,702,517, Cl. 49-504.000.

Martinonis, Virgil: *See—*
Wiesler, Mordechai; Martinonis, Virgil; and Macintyre, John S., 3,702,923.

Maschinenfabrik Stromag G.m.b.H.: *See—*
Schlotmann, Karl; Bohm, Heinz-Dieter; and Ruggen, Werner, 3,702,545.

Mason, Lowell M., to General Electric Company. Apparatus and method for providing insulation in the slots of magnetic cores. 3,702,498, Cl. 29-596.000.

Masuda, Shigeo: *See—*
Tanaka, Toshihiko; and Masuda, Shigeo, 3,702,813.

Matsuno, Hiroshi: *See—*
Kinjo, Kikuo; Yamanouchi, Teruo; Kondo, Eiichi; Matsuno, Hiroshi; and Nishide, Katsuhiko, 3,702,764.

Matsushita Electric Industrial Co., Ltd.: *See—*
Sawairi, Hitoshi; Kurihara, Yoshio; Takahashi, Kazuhiko; Hayakawa, Yoshihiko; and Hataya, Yukio, 3,702,968.

Matsushita Electronics Corporation: *See—*
Nakamura, Hiroto, 3,702,950.

Matsushita, Fukusaburo; Saji, Yasuo; Saito, Kazuhisa; Tanaka, Kozo; and Yoshinari, Osamu, to Toho Beslon Co., Ltd. Method of using a zinc chloride aqueous solution through circulation and of purifying thereof. 3,702,880, Cl. 264-38.000.

Mattel, Inc.: *See—*
Beasley, Noel F.; and Wever, Ray, 3,702,515.

Matthews, Jamie F., Jr., to Esso Production Research Company. Method and apparatus for installing risers. 3,702,539, Cl. 61-72.300.

Maue, Marilyn J. Timepiece for identifying time by color. 3,702,531, Cl. 58-126.00e.

Maurer, Ruprecht: *See—*
Giese, Emil; Maurer, Ruprecht; and Timtner, Karlheinz, 3,702,649.

Mazzini, Angelo. Apparatus for atomizing liquids by centrifugation. 3,702,679, Cl. 239-222.110.

Mc Caul, James F., III.; and Compton, Lloyd A., to Schokbeton Products Corporation. Column connector. 3,702,523, Cl. 52-583.000.

McClone, Robert J.: *See—*
Ryburn, Kenneth D.; McClone, Robert J.; and Fox, Charles H., 3,702,715.

McCord, Henry L.: *See—*
Herman, Elvin E.; Lym, Vernon W.; and McCord, Henry L., 3,703,005.

McDougall, Ranks Hovis, Limited: *See—*
Barker, Sidney Alan; Somers, Peter John; and Epton, Roger, 3,702,804.

McGavic, John P.: *See—*
Gordon, Colin C.; and McGavic, John P., 3,702,601.

McGinniss, Vincent D., to SCM Corporation. Photopolymerization catalyst comprising ferrocene and an active halogen-containing compound. 3,702,812, Cl. 204-159.240.

McLeod, Richard Kenneth: *See—*
Newsom, Raymond A.; McLeod, Richard Kenneth; and Ruland, Norman L., 3,702,811.

McNamara, James Francis; and Turner, Richard Ellis, to Du Pont de Nemours, E. I., and Company. Permeation separation apparatus. 3,702,658, Cl. 210-321.000.

McPhail, James H., to American Micro-Systems, Inc. Electronic test system operable in two modes. 3,702,967, Cl. 324-158.00d.

Meckl, Heinz: *See—*
Ohlschlager, Hans; Riester, Oskar; and Meckl, Heinz, 3,702,767.

Mehmedbasich, Enver, to Chevron Research Company. Phosphate ester amine salts useful as fuel detergents and anti-icing agents. 3,702,757, Cl. 44-58.000.

Mehnert, Gottfried, to Bekum Maschinenfabriken GmbH. Diehead. 3,702,751, Cl. 425-190.000.

Melvanin, William: *See—*
Craigne, William J. S.; Ritcey, Gordon M.; Joe, Edwin Glendon; Melvanin, William; and Smart, Bruce C., 3,702,883.

Mercer, Norman J. Construction for use as a hairdressing tool and as a steam iron. 3,702,616, Cl. 132-9.000.

Merritt, Richard F.: *See—*
Lewis, Sheldon N.; Merritt, Richard F.; and Emmons, William D., 3,702,799.

Metallurgie Hoboken-Overpelt: *See—*
Leroy, Jean L., 3,702,629.

Metalphoto Corporation: *See—*
Speakman, John D., 3,702,581.

Metrailer, William J., to Esso Research and Engineering Company. Process for coking heavy hydrocarbons in a single vessel. 3,702,819, Cl. 208-127.000.

Metzger, Benjamin A.; and Miller, Harry E., to Pryonics, Incorporated. Continuous process brazing method and apparatus. 3,702,692, Cl. 263-6.00r.

Meuller, William J.; and Nowacki, Louis J., to Battelle Memorial Institute. Ships hull coated with antifouling silicone rubber. 3,702,778, Cl. 117-75.000.

Meyer, Amos J., II: *See—*
Schmitt, Peter C.; Vette, Carl W.; and Meyer, Amos J., II, 3,702,899.

Michael, Harold J., to North American Rockwell Corporation. Aluminum and alkali titanate anodic protective coating composition. 3,702,770, Cl. 106-39.00r.

Michaels, Edwin B.; and Lee, John W. Preparation of polyhalo phenols. 3,702,871, Cl. 260-623.00r.

Michell, Douglas Allison: *See—*
Muirhead, Duncan Ronald; and Michell, Douglas Allison, 3,702,595.

Michellone, Giancarlo. Pneumatic pressure reducing valve with rapid discharge. 3,702,622, Cl. 137-107.000.

Microdt, Inc.: *See—*
Munse, Robert A., 3,702,494.

Microlens, Inc., mesne: *See—*
Browning, Iben, 3,702,937.

Middleton, Forest L.: *See—*
Tassell, Donald E.; and Middleton, Forest L., 3,702,718.

Mikofalvy, Bela K.: *See—*
Knechtges, Donald P.; and Mikofalvy, Bela K., 3,702,785.

Mill Industries, Inc.: *See—*
Nichols, John A., 3,702,503.

Miller, Harry E.: *See—*
Metzger, Benjamin A.; and Miller, Harry E., 3,702,692.

Miller, Murray Edwin, to Iroquois Promotion. Proof-of-purchase label. 3,702,511, Cl. 40-306.000.

Miller, Richard, to Maid-Mar Industries, Inc. Brassiere and supporting frames thereof. 3,702,614, Cl. 128-476.000.

Miller, Stewart Edward, to Bell Telephone Laboratories, Incorporated. Low threshold stripe geometry injection laser. 3,702,975, Cl. 331-94.50h.

Mills, Druid L. Timber mill. 3,702,626, Cl. 143-32.00p.

Mine, Akihiko; Kamoshita, Katsuzo; Hino, Naganori; and Nakai, Shinji, to Sumitomo Chemical Company, Ltd. Alkyl-and halo-substituted phenoxy benzonitriles. 3,702,862, Cl. 260-465.00f.

Minnesota Mining & Manufacturing Company: *See—*
Ofstead, Ronald F.; and Gobran, Ramsis, 3,702,844.

Minnesota Mining and Manufacturing Company: *See—*
Haller, James R., 3,702,788.

Mitsubishi Electric Corporation: *See—*
Kurahashi, Koichiro; Nakada, Masanori; Abe, Masaaki; and Nishimura, Koichi, 3,702,896.

Mizuno, Katsumi: *See—*
Kaneko, Tamaki; and Mizuno, Katsumi, 3,702,586.

Mizutani, Toshio; Itaya, Nobushige; Kitamura, Shigeyoshi; Fujimoto, Keimei; and Okuno, Yositosi, to Sumitomo Chemical Company, Ltd. 3-Thia-1-cyclohexene and 3, 6-dithia-1-cyclohexene-1,2 dicarboximide methyl esters of pyrethric, chrysanthemic and related aids. 3,702,851, Cl. 260-326.300.

Mizzy Inc.: *See—*
Reasenberg, Julian R.; and Drucker, Rubin, 3,702,865.

Mobil Oil Corporation: *See—*
Argauer, Robert J.; and Landolt, George R., 3,702,886.
Streed, Carl W.; and Yan, Tsoung-Yuan, 3,702,818.

Mohri, Yohichi, to Nissan Motor Company, Limited. Hydraulic servo valve. 3,702,621, Cl. 137-85.000.

Mollard, Gaston: *See—*
Brenot, Claude; and Mollard, Gaston, 3,702,562.

Moller, Heinrich, to Braun Aktiengesellschaft. Forced circulation air heating unit. 3,702,918, Cl. 219-370.000.

- Mollere, John C., to Western Geophysical Company of America. Underwater cartridge detector. 3,702,984, Cl. 340-8.00r.
- Monsanto Company: *See—*
  - Bach, Hartwig C., 3,702,846.
  - Howe, Robert K., 3,702,861.
  - Newsom, Raymond A.; McLeod, Richard Kenneth; and Ruland, Norman L., 3,702,811.
- Monsanto Research Corporation: *See—*
  - Beltramini, Henry P.; and Dale, James W., 3,702,793.
  - Glasgow, David Gerald; and Follett, Archie E., 3,702,839.
- Montecatini Edison S.p.A.: *See—*
  - Santangelo, Nicola; Battiston, Giancarlo; Pregaglia, Gianfranco; Cavaterra, Enrico; and Croci, Mauro (said Santangelo, Battiston, Pregaglia and Cavaterra assors. to), 3,702,868.
- Monterose, Henry: *See—*
  - Provenzano, James, Jr.; Saunders, John; and Monterose, Henry, 3,702,989.
- Moore, Donald B., to Locking Devices, Inc. Quick connect lugged coupling. 3,702,708, Cl. 285-87.000.
- Mori, Takami, to Okamura Manufacturing Company, Limited. Brake released reversing transmission clutches. 3,702,648, Cl. 192-4.00c.
- Mosch, Willi; Lutz, Gerhard; Putter, Lothar; Waldkotter, Erich; and Martin, Heinz, to Siemens Aktiengesellschaft. Semiconductor component and method of its production. 3,702,954, Cl. 317-234.00r.
- Moses, Harry; Eggenberger, Delbert N.; Halverson, Steven L.; and Managan, William W., to United States of America, Atomic Energy Commission. Method for measuring the height of atmospheric aerosol air. 3,702,565, Cl. 73-170.00r.
- Mosler Research Products, Inc.: *See—*
  - Kaplan, Martin; Hansen, Donald E.; and Quist, Eric G., 3,703,000.
- Mosler Safe Company, The: *See—*
  - Blizard, Horace A., 3,702,551.
- Motorola, Inc.: *See—*
  - Cherry, James R., 3,702,901.
  - Lowry, Robert Arthur, Jr.; and Smith, Billy Eual, 3,702,787.
- Mottier, Francois, to Aktiengesellschaft Brown, Boveri & Cie. Method of and arrangement for examining moving objects by coherent light. 3,702,737, Cl. 356-109.000.
- Mottin, Ralph E.; and Oldani, Anthony L., to Parke, Davis & Company. Novel package means. 3,702,653, Cl. 206-42.000.
- Moxham, Robert M.: *See—*
  - Tanner, Allan B.; Senftle, Frank E.; and Moxham, Robert M., 3,702,932.
- Moyer, James D.: *See—*
  - Hegeman, Rutledge G.; and Moyer, James D., 3,702,548.
- Muirhead, Duncan Ronald; and Michell, Douglas Allison, to Power-Gas Corporation Limited, The. Fluidised bed incinerators. 3,702,595, Cl. 110-8.00r.
- Muller, Heinz: *See—*
  - Sennewald, Kurt; Wesselmann, Rudolf; Holler, Ernst; and Muller, Heinz, 3,702,887.
- Munse, Robert A., to Microdt, Inc. Fastener applying tool. 3,702,494, Cl. 29-225.000.
- Murphy, Joseph P.: *See—*
  - Faith, Jack L.; Boysel, Lee L.; and Murphy, Joseph P., 3,702,945.
- Murphy, Preston V., to Thermo Electron Corporation. Method of making an electret. 3,702,493, Cl. 29-592.000.
- Nakada, Masanori: *See—*
  - Kurahashi, Koichiro; Nakada, Masanori; Abe, Masaaki; and Nishimura, Koichi, 3,702,896.
- Nakai, Shinji: *See—*
  - Mine, Akihiko; Kamoshita, Katsuzo; Hino, Naganori; and Nakai, Shinji, 3,702,862.
- Nakamura, Hiroto, to Matsushita Electronics Corporation. Electrostatic focussing-type television picture tube utilizing a plurality of metal disks. 3,702,950, Cl. 315-31.00r.
- Nakamura, Yoshimi; and Kawakami, Heijiro, to Kobe Steel, Ltd. Apparatus for mechanically removing the scale from the peripheral surface of a hot rolled wire material. 3,702,489, Cl. 15-88.000.
- Nakanuma, Sho; and Wada, Toshio, to Nippon Electric Company, Limited. Monolithic integrated circuit device and method of manufacturing the same. 3,702,790, Cl. 148-1.500.
- Nakaya, Akimichi: *See—*
  - Kodama, Hisashi; Sekigawa, Tsuneo; Hatat, Kazumi; and Nakaya, Akimichi, 3,702,538.
- National Cash Register Company, The: *See—*
  - Haney, Ralph D.; Zachar, James E.; and Drozd, Charles J., 3,702,988.
  - Landis, Donald E.; and Sidhu, Mohanjit S., 3,702,585.
- National Manufacturing Co.: *See—*
  - Banse, George, 3,702,591.
- National Research Development Corporation: *See—*
  - Spillman, John James, 3,702,643.
- National Semiconductor Corporation: *See—*
  - Kalb, Jeffrey C.; and Widlar, Robert J., 3,702,955.
- Neighbors, Ralph P., to Gulf Oil Corporation. Phenoxyalkanoylamidooxyalkanoic compounds. 3,702,863, Cl. 260-471.00a.
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  - Dunham, Kenneth R.; Newcomb, Richard A.; and Yost, Marshall E., 3,702,766.
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- Niagara Machine & Tool Works: *See—*
  - Swenson, Donald G.; and Trautman, George H., Jr., 3,702,558.
- Nicco, Adrien: *See—*
  - Barozier, Jean-Pierre; and Nicco, Adrien, 3,702,782.
- Nichols, John A., to Mill Industries, Inc. Material drying apparatus. 3,702,503, Cl. 34-114.000.
- Nififorov, Vladimir Pavlovich; Zaitsev, Vasily Nikolaevich; Khomyakov, Viktor Stepanovich; Kil, Ilia Genrikhovich; and Tsybukov, Igor Kirillovich, to Vsesojuzny Nauchno-Issledovatelsky i Proektny Institut aljuminievoi, magnievoi i Flektrodnoi promyshlennosi. Cathode casing of electrolyzer for producing aluminum. 3,702,815, Cl. 204-243.00r.
- Nilsson, Jan: *See—*
  - Larker, Hans; and Nilsson, Jan, 3,702,555.
  - Larker, Hans; and Nilsson, Jan, 3,702,556.
- Nippon Electric Company, Limited: *See—*
  - Nakanuma, Sho; and Wada, Toshio, 3,702,790.
- Nippon Kokan Kabushiki Kaisha: *See—*
  - Kodama, Hisashi; Sekigawa, Tsuneo; Hatat, Kazumi; and Nakaya, Akimichi, 3,702,538.
  - Nomura, Hirokazu, 3,702,914.
- Nippondenso Kabushiki Kaisha: *See—*
  - Wakamatsu, Hisato; Kitano, Akira; and Kawai, Hisasi, 3,702,572.
- Nishide, Katsuhiko: *See—*
  - Kinjo, Kikuo; Yamanouchi, Teruo; Kondo, Eiichi; Matsuno, Hiroshi; and Nishide, Katsuhiko, 3,702,764.
- Nishimura, Koichi: *See—*
  - Kurahashi, Koichiro; Nakada, Masanori; Abe, Masaaki; and Nishimura, Koichi, 3,702,896.
- Nishimura, Seiichi: *See—*
  - Oda, Naoteru; Nishimura, Seiichi; and Komatsu, Hideo, 3,702,694.
- Nissan Motor Company, Limited: *See—*
  - Mohri, Yohichi, 3,702,621.
  - Shimizu, Yasushi, 3,702,550.
- Nitto Kasei Co., Ltd.: *See—*
  - Seki, Toshio; Hiyama, Yasuo; and Sato, Yoshitaka, 3,702,858.
- Nixon, David L.: *See—*
  - United States of America, National Aeronautics and Space Administration, 3,702,979.
- Noegel, Charles R.: *See—*
  - Anderson, Bruce J.; and Noegel, Charles R., 3,702,925.
- Nolin, Roger J., to Tool Research & Engineering Corporation. Cylinder lock plug. 3,702,553, Cl. 70-375.000.
- Nolte, Helmuth; Lindemann, Paul; and Hahn, Walter, to Wasagchemie GmbH. Novel polybasic propellant. 3,702,792, Cl. 149-10.000.
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- Nordal, Vegard: *See—*
  - Salvesen, Sigbjorn; Haugen, Leif Gunnar; Haavaldsen, Johan; and Nordal, Vegard, 3,702,866.
- North American Rockwell Corporation: *See—*
  - Hegeman, Rutledge G.; and Moyer, James D., 3,702,548.
  - Lee, Bert Leonard, 3,702,587.
  - Marshall, Claude J., 3,702,567.
  - Michael, Harold J., 3,702,770.
- Norton Company: *See—*
  - Fine, Richard A., 3,702,593.
- Nowacki, Louis J.: *See—*
  - Meuller, William J.; and Nowacki, Louis J., 3,702,778.
- Nutter, Lyle M. Latch for overhead doors. 3,702,710, Cl. 292-235.000.
- Nyegaard & Co., A/s: *See—*
  - Salvesen, Sigbjorn; Haugen, Leif Gunnar; Haavaldsen, Johan; and Nordal, Vegard, 3,702,866.
- Obermaier, Alfred A.; and Pierman, Martin J., to Alnor Instrument Company. High air velocity measuring system having thermotransducer. 3,702,566, Cl. 73-204.000.
- Oberthur, Heinrich, to ITT Industries. Anti-skid control device. 3,702,713, Cl. 303-21.00f.
- Oda, Naoteru; Nishimura, Seiichi; and Komatsu, Hideo, to Sumitomo Metal Industries, Ltd. Method and apparatus for judging the conditions of blast furnace. 3,702,694, Cl. 266-27.000.
- Odell, Norman R.: *See—*
  - Cummins, Billy H.; Ashton, William B.; Coleman, Richard L.; and Odell, Norman R., 3,702,817.
- Odum, William T.; Elkins, James H.; and Coggings, Thomas M., to United States of America, Navy. Salvage work vehicle. 3,702,597, Cl. 114-16.800.
- Ofstead, Ronald F.; and Gobran, Ramsis, to Minnesota Mining & Manufacturing Company. Polyvinyl alcohol-phosphoric acid films. 3,702,844, Cl. 260-91.3va.
- Ogura, Kazuhiko: *See—*
  - Takeichi, Morio; and Ogura, Kazuhiko, 3,702,726.

- Ohlschlager, Hans; Riester, Oskar; and Meckl, Heinz, to Agfa-Gevaert Aktiengesellschaft. Spectrally sensitized light sensitive material. 3,702,767, Cl. 96-127.000.
- Oil States Rubber Company: *See—*
  - Landers, Don B., 3,702,537.
- Okamura Manufacturing Company, Limited: *See—*
  - Mori, Takami, 3,702,648.
- Okaniwa, Tokio: *See—*
  - Ishibashi, Keijiro; Okaniwa, Tokio; Hattori, Atsushi; and Arai, Masetoshi, 3,702,805.
- Okuno, Yositosi: *See—*
  - Kitamura, Shigeyoshi; Hirai, Hajime; Okuno, Yositosi; and Fujimoto, Keimei, 3,702,864.
  - Mizutani, Toshio; Itaya, Nobushige; Kitamura, Shigeyoshi; Fujimoto, Keimei; and Okuno, Yositosi, 3,702,851.
- Oldani, Anthony L.: *See—*
  - Mottin, Ralph E.; and Oldani, Anthony L., 3,702,653.
- Oliva, William Emil. Disposable culture media container. 3,702,806, Cl. 195-139.000.
- Olivetti, Ing. C., & C., S.p.A.: *See—*
  - Beneria, Giovanni Bessolo, 3,702,750.
  - Joel, Henry G., 3,702,930.
- Olsson, Kjell Olow Ingemar. Device for generating microwave oscillations. 3,702,977, Cl. 331-107.00r.
- Olympus Optical Co., Ltd.: *See—*
  - Sato, Masaaki, 3,702,907.
- Otoshi, Tom Y.: *See—*
  - United States of America, National Aeronautics and Space Administration, 3,702,979.
- Owen, William J.: *See—*
  - Quinn, James A.; Owen, William J.; and Terpstra, Garry, 3,702,569.
- Owens-Corning Fiberglas Corporation: *See—*
  - Shannon, Richard F., 3,702,798.
- Palmer, Leonard: *See—*
  - Flusfeder, Joseph; and Palmer, Leonard, 3,702,749.
- Palmer, Walter E. Moisture indicator for plants. 3,702,755, Cl. 23-253.0tp.
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- Park-Ohio Industries, Inc.: *See—*
  - Balzer, Norbert Raymond, 3,702,693.
- Parke, Davis & Company: *See—*
  - Mottin, Ralph E.; and Oldani, Anthony L., 3,702,653.
- Parmerlee, James K. Rotary free piston gas generator. 3,702,746, Cl. 417-481.000.
- Patent-Treuhand-Gesellschaft furelectrische Gluhlampen mbH: *See—*
  - Schilling, Werner; and Lukas, Josef, 3,702,582.
- Patrick, Richard M.: *See—*
  - Daugherty, Jack D.; Douglas-Hamilton, Diarmaid H.; Patrick, Richard M.; and Pugh, Evan R., 3,702,973.
- Payne, Billy D.: *See—*
  - Watson, James W.; and Payne, Billy D., 3,702,777.
- Pearce, Larry N., to Deering Milliken Research Corporation. Yarn bulking methods. 3,702,492, Cl. 28-72.0hr.
- Peck, William G.: *See—*
  - Hall, Thomas O., Jr.; and Peck, William G., 3,702,922.
- Pedrazzoli, Andrea; and Asta, Leone Dall, to Societe d'Etudes de Recherches et d'Applications Scientifiques et Medicales E.R.A.S.M.E. 1,2,3,6-Tetrahydropyridine derivatives. 3,702,850, Cl. 260-294.860.
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- Perkins, Lee E.: *See—*
  - Anderson, Merlin F.; and Perkins, Lee E., 3,702,634.
- Peschl, Ervin, to Vyzkumny Ustav Pletarsky. Apparatus for controlling warp knitting latch needles. 3,702,547, Cl. 66-86.000.
- Peterson, Francis C., to Hager, C., & Sons Hinge Manufacturing Company. Closet construction. 3,702,521, Cl. 52-36.000.
- Petigara, Remesh: *See—*
  - Yale, Harry Louis; and Petigara, Remesh, 3,702,852.
- Petro-Tex Chemical Corporation: *See—*
  - Arganbright, Robert P., 3,702,827.
  - Manning, Harold E.; Woskow, Marvin Z.; and Christmann, Harold F., 3,702,875.
- Pettigrew, David D., to Rockwell Manufacturing Company. Drill press with coalant means. 3,702,740, Cl. 408-56.000.
- Peytavin, Pierre; and Babel, Louis, to Societe Civile dite de Centrifugation. Apparatus for casting solid cylindrical metallic objects. 3,702,630, Cl. 164-260.000.
- Pfannmueller, Helmut: *See—*
  - Steigerwald, Klaus; Buechner, Oskar; Urban, Friedrich; and Pfannmueller, Helmut, 3,702,845.
- Pfizer Inc.: *See—*
  - Cronin, Timothy H.; and Hess, Hans-Jurgen E., 3,702,849.
  - Goldman, Irving M., 3,702,889.
- Picciano, James K.; and Zauchner, Joseph, to International Business Machines Corporation. FET decode circuit. 3,702,926, Cl. 235-154.000.
- Picker-Andrex X-Ray A/S: *See—*
  - Jakobsen, Niels, 3,702,934.
- Pierce, Joseph E., to AEI Corporation. Mixing dispenser having common feed line. 3,702,667, Cl. 222-145.000.
- Pierman, Martin J.: *See—*
  - Obermaier, Alfred A.; and Pierman, Martin J., 3,702,566.
- Pittman, Allen G.; and Wasley, William L., to United States of America, Agriculture. Siloxane polymers for soil-repellent and soil release textile finishes. 3,702,859, Cl. 260-448.20b.
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- Polaroid Corporation: *See—*
  - Erlichman, Irving, 3,702,580.
  - Taylor, Lloyd D., 3,702,829.
- Polymetallurgical Corporation: *See—*
  - Dion, Paul A.; and Hagarman, Paul O., 3,702,497.
- Porter, Lawrence C.; and Graves, Kenneth E., to Upjohn Company, The. Apparatus for producing isotropic foamed stock. 3,702,747, Cl. 425-4.000.
- Portz, Wilhelm: *See—*
  - Kirchem, Heinz; and Portz, Wilhelm, 3,702,894.
- Potter, Andrew E., Jr., to United States of America, National Aeronautics and Space Administration. Multispectral imaging system. 3,702,735, Cl. 356-106.00s.
- Pouligny, Claude: *See—*
  - Zeter, Francois; Bellardy, Roger; Pouligny, Claude; and Walter, Marc, 3,702,529.
- Power-Gas Corporation Limited, The: *See—*
  - Muirhead, Duncan Ronald; and Michell, Douglas Allison, 3,702,595.
- Pregaglia, Gianfranco: *See—*
  - Santangelo, Nicola; Battiston, Giancarlo; Pregaglia, Gianfranco; Cavaterra, Enrico; and Croci, Mauro, 3,702,868.
- Preuss, Hans W.: *See—*
  - Festner, Theodor; Litwin, Theodore J.; and Preuss, Hans W., 3,702,796.
- Prillwitz, Rolf: *See—*
  - Staudt, Heinrich; and Prillwitz, Rolf, 3,702,577.
- Proctor Paint and Varnish Co., Inc.: *See—*
  - Schmidt, Richard, 3,702,625.
- Proebsting, Robert J., to Texas Instruments, Incorporated. MOS transistor integrated matrix. 3,702,985, Cl. 340-166.00r.
- Provenzano, James, Jr.; Saunders, John; and Monterose, Henry, to United Aircraft Corporation. Selective data handling apparatus. 3,702,989, Cl. 340-172.500.
- Prow, Harold James, Jr.: *See—*
  - Kelly, Joseph Francis; and Prow, Harold James, Jr., 3,702,982.
- Pruvot, Francois C., to Regie Nationale des Usines Renault. High-pressure multi-cylinder hydraulic machines. 3,702,576, Cl. 91-487.000.
- Pryonics, Incorporated: *See—*
  - Metzger, Benjamin A.; and Miller, Harry E., 3,702,692.
- Pugh, Evan R.: *See—*
  - Daugherty, Jack D.; Douglas-Hamilton, Diarmaid H.; Patrick, Richard M.; and Pugh, Evan R., 3,702,973.
- Pumpenfabrik Urach: *See—*
  - Fries, Hugo, 3,702,624.
- Putter, Lothar: *See—*
  - Mosch, Willi; Lutz, Gerhard; Putter, Lothar; Waldkotter, Erich, and Martin, Heinz, 3,702,954.
- Quaker Oats Company, The: *See—*
  - Brown, Lloyd H.; and Watson, David D., 3,702,771.
- Quinlan, William J.; and Huver, Lawrence L. Detachable windshield wiper blade unit. 3,702,490, Cl. 15-250.420.
- Quinn, James A.; Owen, William J.; and Terpstra, Garry, to Singer Company, The. System for eliminating gyro on-off drift effect. 3,702,569, Cl. 74-5.470.
- Quist, Eric G.: *See—*
  - Kaplan, Martin; Hansen, Donald E.; and Quist, Eric G., 3,703,000.
- Rainey, Don E. Coin controlled vending apparatus with hydraulic actuating system. 3,702,665, Cl. 221-301.000.
- Rancray Limited: *See—*
  - Barnard, Roy Albert Drake, 3,702,606.
- Randall, Bill R.; and Gulsby, Jerry G., to Fish Engineering & Construction Incorporated. Low temperature method for removing condensable components from hydrocarbon gas. 3,702,541, Cl. 62-26.000.
- Ranson, Wesley J.: *See—*
  - Davis, Bernard J.; and Ranson, Wesley J., 3,702,842.
- Rassat, Andre: *See—*
  - Chiarelli, Robert; Rassat, Andre; Besson, Rene; and Salvi, Antoine, 3,702,831.
- Raudat, John L.: *See—*
  - Johnson, Lloyd D.; Kroeber, Kenneth E.; and Raudat, John L., 3,702,524.
- Raygo, Inc.: *See—*
  - Csathy, Denis G., 3,702,633.
  - Takata, Harry H., 3,702,638.
- Raytheon Company: *See—*
  - Diamond, Paul, 3,703,003.
- RCA Corporation: *See—*
  - Aiduck, Carl Joseph; and Mancini, Ronald Alfred, 3,702,941.
  - Duffy, Michael Thomas, 3,702,786.
  - Heuner, Robert Charles; and Fillmore, Richard Plumb, 3,702,943.
  - Kawamoto, Hiroshisa; and Allen, Elmer Lawrence, Jr., 3,702,971.
  - Macovski, Albert, 3,702,725.
  - Ross, Edward Charles, 3,702,990.
- Reasenberg, Julian R.; and Drucker, Rubin, to Mizzy Inc. Ethyl 2-methyl-2-n-propylamino-propyl succinate. 3,702,865, Cl. 260-485.00j.

Redman, Michael J., to Kennecott Copper Corporation. Micaceous tellurites and the method of making them. 3,702,888, Cl. 423-508.000.
Regal, Jean C. A.: *See—*
Gorinas, Guy G.; and Regal, Jean C. A., 3,702,500.
Regan, Bernard M., to Baxter Laboratories, Inc. Production of hexafluoropropanol. 3,702,872, Cl. 260-633.000.
Regie Nationale des Usines Renault: *See—*
Pruvot, Francois C., 3,702,576.
Reichhold Chemicals, Inc.: *See—*
Davis, Bernard J.; and Ranson, Wesley J., 3,702,842.
Renard, Michel; Cardinne, Philippe; and Manhes, to L'Air Liquide Societe Anonyme pour l'Etude et et l'Exploitation des Procedes Georges Claude. Josephson junctions. 3,702,956, Cl. 317-235.00r.
Renoe, Ronald R., to Hallmark Cards, Incorporated. Method of producing compression molded candles. 3,702,495, Cl. 29-428.000.
Rentfrow, James M. Paint roller. 3,702,739, Cl. 401-197.000.
Rettew, Richard R.; Wirth, David G., Jr.; and Glemza, Rimantas, to Grace, W. R., & Co. Process for the preparation of fine sized magnesium aluminate spinal. 3,702,882, Cl. 423-600.000.
Reynard, Kennard A.: *See—*
Rose, Selwyn H.; and Reynard, Kennard A., 3,702,833.
Reynolds, John M.: *See—*
Fields, Stanley A.; and Reynolds, John M., 3,702,933.
Reynolds, Wayne H., to Zenith Radio Corporation. Variable capacitor. 3,702,958, Cl. 317-253.000.
Rice, Dennis Keith: *See—*
Koechner, Walter; Rice, Dennis Keith; and De Shazer, Larry Grant, 3,702,974.
Rice, Edwin Eugene; and Franklin, Charles Henry, to Chemotronics International Inc. Method for the removal of unwanted portions of an article by spraying with high velocity dry ice particles. 3,702,519, Cl. 51-310.000.
Richardson, James G.: *See—*
Gamer, Nicholas T.; and Richardson, James G., 3,702,763.
Richardson, Raymond M. Frequency sensitive suspension system fluid damper. 3,702,647, Cl. 188-283.000.
Richey, Thomas B.; and Spilker, Clarence W., to Malmstrom Chemical Corporation. Paraffin wax compositions. 3,702,772, Cl. 106-270.000.
Ricoh Co., Ltd.: *See—*
Kaneko, Tamaki; and Mizuno, Katsumi, 3,702,586.
Riegel Textile Corporation: *See—*
Teed, Richard K., 3,702,696.
Riester, Oskar: *See—*
Ohlschlager, Hans; Riester, Oskar; and Meckl, Heinz, 3,702,767.
Ringspann Albrecht Maurer K.G.: *See—*
Giese, Emil; Maurer, Ruprecht; and Timtner, Karlheinz, 3,702,649.
Ritcey, Gordon M.: *See—*
Craigne, William J. S.; Ritcey, Gordon M.; Joe, Edwin Glendon; Melvanin, William; and Smart, Bruce C., 3,702,883.
Ritter, Dale L.: *See—*
Huber, William C.; and Ritter, Dale L., 3,702,520.
Rochat, Daniel: *See—*
Besson, Rene; Lawsser, Claude; and Rochat, Daniel, 3,702,530.
Rockwell Manufacturing Company: *See—*
Pettigrew, David D., 3,702,740.
Rohm and Haas Company: *See—*
Boone, Christopher B., 3,702,877.
Lewis, Sheldon N.; Merritt, Richard F.; and Emmons, William D., 3,702,799.
Rohr Industries, Inc.: *See—*
Weidel, Joseph C., 3,702,560.
Romey, Herbert R. Visual teaching device for telling time. 3,702,507, Cl. 35-39.000.
Rosan, Jose, Sr. Fittings for high pressure fluid lines. 3,702,707, Cl. 285-23.000.
Rose, Selwyn H.; and Reynard, Kennard A., to Horizons Incorporated. Curable fluorophosphazene polymers. 3,702,833, Cl. 260-2.00p.
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Rozacky, Rebecca: *See—*
Rozacky, Eugene E.; and Rozacky, Rebecca, 3,702,615.
Ruggen, Werner: *See—*
Schlotmann, Karl; Bohm, Heinz-Dieter; and Ruggen, Werner, 3,702,545.
Ruland, Norman L.: *See—*
Newsom, Raymond A.; McLeod, Richard Kenneth; and Ruland, Norman L., 3,702,811.
Rullman, George B. Apparatus for processing food. 3,702,583, Cl. 99-335.000.
Russell, Linus E., to International Telephone and Telegraph Corporation, mesne. Water pressure and like systems. 3,702,742, Cl. 417-25.000.
Russell, William C., to Eastman Kodak Company. Electronically controlled variable rate film feeding mechanism for motion picture projectors. 3,702,730, Cl. 352-191.000.
Ryburn, Kenneth D.; McClone, Robert J.; and Fox, Charles H., to Westinghouse Air Brake Company. Pneumatic brake system. 3,702,715, Cl. 303-30.000.
Saab-Scania Aktienbolag: *See—*
Lindahl, Bo Oscar; Lamme, Seth Eric Valentin; and Hallenrud, Sven Josef Harry, 3,702,734.
Sainz, Jorge R. Variable speed transmission. 3,702,571, Cl. 74-341.000.
Saito, Kazuhisa: *See—*
Matsushita, Fukusaburo; Saji, Yasuo; Saito, Kazuhisa; Tanaka, Kozo; and Yoshinari, Osamu, 3,702,880.
Saito, Toranosuke, to Sanko Chemical Co., Ltd. Cyclic organophosphorus compounds and process for making same. 3,702,878, Cl. 260-936.000.
Saji, Yasuo: *See—*
Matsushita, Fukusaburo; Saji, Yasuo; Saito, Kazuhisa; Tanaka, Kozo; and Yoshinari, Osamu, 3,702,880.
Sakai, Masaaki, to Fujitsu Limited. Large capacity ferromagnetic thin film memory device. 3,702,992, Cl. 340-174.0tf.
Salvesen, Sigbjorn; Haugen, Leif Gunnar; Haavaldsen, Johan; and Nordal, Vegard, to Nyegaard & Co., A/s. Novel 3,5-bis-acylamido-2,4,6-triiodobenzoic acids and 5-acylamido-2,4,6-triiodo- isophthalamic acid. 3,702,866, Cl. 260-501.110.
Salvi, Antoine: *See—*
Chiarelli, Robert; Rassat, Andre; Besson, Rene; and Salvi, Antoine, 3,702,831.
Sanko Chemical Co., Ltd.: *See—*
Saito, Toranosuke, 3,702,878.
Sankyo Company, Limited: *See—*
Ishibashi, Keijiro; Okaniwa, Tokio; Hattori, Atsushi; and Arai, Masetoshi, 3,702,805.
Sansui Electric Co., Ltd.: *See—*
Sugiura, Naokatsu, 3,702,908.
Santangelo, Nicola; Battiston, Giancarlo; Pregaglia, Gianfranco; Cavaterra, Enrico; and Croci, Mauro; deceased (by Croci, Angelo; and Biagioni, Margherita; heirs), said Santangelo, Battiston, Pregaglia and Cavaterra assors. to Montecatini Edison S.p.A. Proess for the preparation of acetic acid by catalytic oxidation of olefins in gaseous phase. 3,702,868, Cl. 260-533.00r.
Sargent Industries, Inc., mesne: *See—*
Chacko, Joseph, 3,702,623.
Sato, Masaaki, to Olympus Optical Co., Ltd. Device for automatically preventing the erasing of a tape in a tape cassette. 3,702,907, Cl. 179-100.20z.
Sato, Yoshitaka: *See—*
Seki, Toshio; Hiyama, Yasuo; and Sato, Yoshitaka, 3,702,858.
Saunders, John: *See—*
Provenzano, James, Jr.; Saunders, John; and Monterose, Henry, 3,702,989.
Sawairi, Hitoshi; Kurihara, Yoshio; Takahashi, Kazuhiko; Hayakawa, Yoshihiko; and Hataya, Yukio, to Matsushita Electric Industrial Co., Ltd. AM-FM radio receiver having novel RF input circuit. 3,702,968, Cl. 325-315.000.
Sawko, Paul M., to United States of America, National Aeronautics and Space Administration. Intumescent paint containing nitrile rubber. 3,702,841, Cl. 260-2.50f.
Schadlich, Fritz, to Bosch, Robert, G.m.b.H. Chuck. 3,702,705, Cl. 279-62.000.
Scheer, C. F., & Cie: *See—*
Fritsch, Rudolf P., 3,702,691.
Schilling, Harald, to ITT Industries, Inc. Monolithic Darlington transistors with common collector and seperate subcollectors. 3,702,947, Cl. 307-303.000.
Schilling, Werner; and Lukas, Josef, to Patent-Treuhand-Gesellschaft furelectrische Gluhlampen mbH. Multiflash device, such as flashcube, with mechanically ignitable flashlamps. 3,702,582, Cl. 95-11.001.
Schlesinger, Robert M. Catheter support. 3,702,612, Cl. 128-350.00r.
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Schokbeton Products Corporation: *See—*
Mc Caul, James F., III.; and Compton, Lloyd A., 3,702,523.
Schonhuber, Max-Josef, to Siemens Aktiengesellschaft. Vacuum circuit breaker. 3,702,911, Cl. 200-144.00b.
Schwebel, Adolf, to Mabeg-Maschinenbau G.m.b.H. Suction-operated device for feeding sheets one by one to point of utilization. 3,702,698, Cl. 271-26.000.
Schweiger, Richard G. Nitrite, nitrate and sulfate esters of polyhydroxy polymers. 3,702,843, Cl. 260-91.3va.

Schweitzer, E. O., Manufacturing Co., Inc.: *See—*
Schweitzer, Edmund O., Jr., 3,702,966.
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SCM Corporation: *See—*
McGinniss, Vincent D., 3,702,812.
Watson, James W.; and Payne, Billy D., 3,702,777.
Segebrecht, Udo, to Siemen & Hinsch mbH. Liquid piston rotary gas pump assembly. 3,702,745, Cl. 417-68.000.
Seki, Toshio; Hiyama, Yasuo; and Sato, Yoshitaka, to Nitto Kasei Co., Ltd. Hydrocarbyl tin carboxylate. 3,702,858, Cl. 260-429.700.
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Kodama, Hisashi; Sekigawa, Tsuneo; Hatat, Kazumi; and Nakaya, Akimichi, 3,702,538.
Semenoff, Arnold: *See—*
Tobinick, Sidney; and Semenoff, Arnold, 3,702,484.
Senftle, Frank E.: *See—*
Tanner, Allan B.; Senftle, Frank E.; and Moxham, Robert M., 3,702,932.
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Sergerie, Felix Antoine, to Alcan Research and Development Limited. Apparatus for continuous casting of metal ingots. 3,702,631, Cl. 164-274.000.
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Shaffer, Frank E. Cable connector. 3,702,709, Cl. 287-81.000.
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Shaw, Kenneth, to Hill, Fred, & Son Company. Loading platform. 3,702,645, Cl. 187-18.000.
Shefsiek, Paul K.: *See—*
United States of America, National Aeronautics and Space Administration, 3,702,762.
Shell Oil Company: *See—*
Bell, Charles S.; and Wulff, Harald P., 3,702,855.
Son, Jaime S., 3,702,619.
Van Steveninck, Johannes, 3,702,540.
Sheppard, Milton R .; and Henderson, William Leland, to Kimberly-Clark Corporation. Flushable web containing flushability indicator and absorbent pads wrapped therewith. 3,702,610, Cl. 128-284.000.
Sherburne, Philip C. Shock absorber for fluid systems. 3,702,646, Cl. 188-280.000.
Shigaki, Seiichiro, to Communication Satellite Corporation. Pulse amplifier. 3,702,944, Cl. 307-246.000.
Shimizu, Yasushi, to Nissan Motor Company Limited and Kanto Seiki Co., Limited. Steering lock device. 3,702,550, Cl. 70-252.000.
Shumaker, Charles Storer, to Wean United, Inc. Roll positioning means for a rolling mill. 3,702,554, Cl. 72-21.000.
Sidhu, Mohanjit S.: *See—*
Landis, Donald E.; and Sidhu, Mohanjit S., 3,702,585.
Siemen & Hinsch mbH: *See—*
Segebrecht, Udo, 3,702,745.
Siemens Aktiengesellschaft: *See—*
Kraft, Wolfgang, 3,702,946.
Mosch, Willi; Lutz, Gerhard; Putter, Lothar; Waldkotter, Erich, and Martin, Heinz, 3,702,954.
Schonhuber, Max-Josef, 3,702,911.
Silicon Technology Corporation: *See—*
Jones, Don R., 3,702,604.
Simmonds, Peter G.: *See—*
United States of America, National Aeronautics and Space Administration, 3,702,532.
Simmonds Precision Products, Inc.: *See—*
Akeley, Lloyd T., 3,702,910.
Simmons, Bjorn Herman Olof, to Aktiebolaget Bofors. Device for a flare. 3,702,588, Cl. 102-35.600.
Simonet, Guy A.; and Lesur, Pierre F., to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Gas purifying process and apparatus. 3,702,525, Cl. 55-25.000.
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Quinn, James A.; Owen, William J.; and Terpstra, Garry, 3,702,569.
Singer Company, The, mesne: *See—*
Slater, Robert, 3,703,004.
SKF Industrial Trading and Development Company, N.V.: *See—*
Hallerback, Stig Lennart, 3,702,720.
Skuja, Ivars M., to Audiscan Incorporated. Film projection system. 3,702,721, Cl. 353-19.000.
Slater, Robert, to Singer Company, The, mesne. Leakage filter for frequency modulated continuous wave doppler radar system. 3,703,004, Cl. 343-8.000.
Sliwkowski, Joseph J., to Computervision Corporation. Exposure control apparatus and method utilizing time VS intensity tradeoff servo system. 3,702,732, Cl. 355-68.000.
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Craigne, William J. S.; Ritcey, Gordon M.; Joe, Edwin Glendon; Melvanin, William; and Smart, Bruce C., 3,702,883.
Smith, Billy Eual: *See—*
Lowry, Robert Arthur, Jr.; and Smith, Billy Eual, 3,702,787.
Smith, George T. Swinging doll game. 3,702,699, Cl. 273-1.
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Kish, Donald Eugene; and Smith, James Lanson, 3,702,994.
Smith, Wade O.; and Toft, Albert R., to United States of America, National Aeronautics and Space Administration. Process for the production of star fracking reticles. 3,702,808, Cl. 204-15.000.
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Land, Cecil E.; and Smith, Willis D., 3,702,724.
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Societe Alsacienne de Constructions Atomiques de Telecommunications et d'Electronique Alcatel: *See—*
Gorinas, Guy G.; and Regal, Jean C. A., 3,702,500.
Societe Anonyme dite: Etablissements Pierre Bevengut: *See—*
Bevengut, Bernard, 3,702,684.
Societe Civile dite de Centrifugation: *See—*
Peytavin, Pierre; and Babel, Louis, 3,702,630.
Societe d'Etudes de Brevets et d'Applications Technologiques, (S.E.B.A.T.): *See—*
Le Gloan, Andre, 3,702,959.
Societe d'Etudes de Recherches et d'Applications Scientifiques et Medicales E.R.A.S.M.E.: *See—*
Pedrazzoli, Andrea; and Asta, Leone Dall, 3,702,850.
Societe Fabrique de Horlogerie la Vedette Saverne Societe Jaz S. A.: *See—*
Zeter, Francois; Bellardy, Roger; Pouligny, Claude; and Walter, Marc, 3,702,529.
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Solovieff, George B.; Solovieff, Paul G.; and Solovieff, Stephen W., 3,702,549
Solovieff, Stephen W.: *See—*
Solovieff, George B.; Solovieff, Paul G.; and Solovieff, Stephen W., 3,702,549.
Somers, Peter John: *See—*
Barker, Sidney Alan; Somers, Peter John, and Epton, Roger, 3,702,804.
Son, Jaime S., to Shell Oil Company. In-line mixing apparatus for gases. 3,702,619, Cl. 137-3.000.
Speakman, John D., to Metalphoto Corporation. Method and apparatus for forming images in anodized sheet metal. 3,702,581, Cl 95-89.00r.
Spilker, Clarence W.: *See—*
Richey, Thomas B.; and Spilker, Clarence W., 3,702,772.
Spillman, John James, to National Research Development Corporation. Means for bounding cushion spaces of gas cushion vehicles. 3,702,643, Cl. 180-127.000.
Spinnler, Rainer: *See—*
Fauth, Gunter; and Spinnler, Rainer, 3,702,953.
Squibb, E. R., & Sons, Inc., mesne: *See—*
Yale, Harry Louis; and Petigara, Remesh, 3,702,852.
Stahmer, B.: *See—*
Brown, Byron T.; and Stahmer, B., 3,702,744.
Staley, A. E., Manufacturing Company: *See—*
Hathaway, Robert J., 3,702,847.
Stanford Research Institute: *See—*
Wood, Bernard J., 3,702,876.
Stano, Eugene A., to Florida Juice Vendors, Inc. Vending machine 3,702,666, Cl. 222-129 400.
Staudt, Heinrich; and Prillwitz, Rolf, to Bosch, Robert, G.m.b.H. Drive shaft positioning device associated with fuel injection pumps. 3,702,577, Cl. 92-15.000.
Steigerwald, Klaus; Buechner, Oskar; Urban, Friedrich; and Pfannmueller, Helmut, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Continuous production of ethylene homopolymers. 3,702,845, Cl. 260-94.90r.
Steiner, Maurice. Hypodermic syringes, in particular self-injecting syringes. 3,702,609, Cl. 128-218.00f.
Stelzried, Charles T.: *See—*
United States of America, National Aeronautics and Space Administration, 3,702,979.
Stephens, Dennis T.; and Flees, Peter, to Hoover Ball and Bearing Company. Pallet accessory. 3,702,676, Cl. 229-14.00c.
Stetzler, Grant F., to Western Electric Company, Incorporated. System and method for determining the maximum output voltage swing on operational amplifiers. 3,702,970, Cl. 330-2.000.
Stevens, Charles Edward, to Exton, John M.; trustee of the trust known for business purposes as the Exton Development Company. Method for manufacturing masks to be used for ornamenting glass articles in an abrasive blasting process. 3,702,496, Cl. 29-472.90.
Stewart, James M., to Stewart Research, Inc. Instrument control system. 3,702,940, Cl. 307-92.000.
Stewart Research, Inc.: *See—*
Stewart, James M., 3,702,940.
Stikkers, Tieme C., to Dayco Corporation. Drive for vehicle mounted alternator. 3,702,570, Cl. 74-242.15r.
Stinebaugh, Robert E.: *See—*
Howell, Harold D.; Hunter, Thomas O.; and Stinebaugh, Robert E., 3,702,620.
Stolle Corporation: *See—*
Hasselbeck, Richard J.; and Kaminski, Elton G., 3,702,559.

- Storb, Uwe; Kaiser, Herbert; and Kaiser, Gunter, to Gebr. Kaiser, Maschinenfabrik. Apparatus for the production of pellets from a melt. 3,702,748, Cl. 425-6.000.
- Strauss, Walter: *See*—
  - Bobeck, Andrew Henry; Ciak, Frank John; and Strauss, Walter, 3,702,995.
- Streed, Carl W.; and Yan, Tsoung-Yuan, to Mobil Oil Corporation. Hydrocracking process with zeolite and amorphous base catalysts. 3,702,818, Cl. 208-89.000.
- Streicher, Heinz: *See*—
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- Stuart, John W., to United States of America, National Aeronautics and Space Administration. Diffuse reflective coating. 3,702,775, Cl. 117-35.00r.
- Sturmer, Hans, to Bosch, Robert, G.m.b.H. Fuel injection valve. 3,702,683, Cl. 239-585.000.
- Sturzinger, Oskar, to Anstalt Europaische Handelsgesellschaft. Synchronizing devices. 3,702,900, Cl. 178-53.100.
- Suda, Tatsuo: *See*—
  - De Luca, Hector F.; and Suda, Tatsuo, 3,702,810.
- Suggitt, Robert M.: *See*—
  - Estes, John H.; Kravitz, Stanley; and Suggitt, Robert M., 3,702,874.
- Sugiura, Naokatsu, to Sansui Electric Co., Ltd. Automatic tape driving system for tape recorders using a low frequency signal with a non signal for reversing. 3,702,908, Cl. 179-100.20s.
- Sumitomo Chemical Company, Ltd.: *See*—
  - Hamuro, Keizo, 3,702,891.
  - Kitamura, Shigeyoshi; Hirai, Hajime; Okuno, Yositosi; and Fujimoto, Keimei, 3,702,864.
  - Mine, Akihiko; Kamoshita, Katsuzo; Hino, Naganori; and Nakai, Shinji, 3,702,862.
  - Mizutani, Toshio; Itaya, Nobushige; Kitamura, Shigeyoshi; Fujimoto, Keimei; and Okuno, Yositosi, 3,702,851.
- Sumitomo Electric Industries, Ltd.: *See*—
  - Tanaka, Toshihiko; and Masuda, Shigeo, 3,702,813.
- Sumitomo Metal Industries, Ltd.: *See*—
  - Oda, Naoteru; Nishimura, Seiichi; and Komatsu, Hideo, 3,702,694.
- Sung, Thomas. Circularly sweeping toothbrush. 3,702,487, Cl. 15-22.00r.
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  - Ermolenko, Igor Nikolaevich; Sviridova, Remma Nikolaevna; and Kuvaeva, Zoya Ivanovna, 3,702,832.
- Swenson, Donald G.; and Trautman, George H., Jr., to Niagara Machine & Tool Works. Deflection compensating press brake die support. 3,702,558, Cl. 72-389.000.
- Swift, George B.: *See*—
  - Genyk, Walter; Martin, Raymond E.; Swift, George B.; Wiggins, Robert L.; and Wolfe, Raymond W., 3,702,510.
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  - Edwards, John A.; and Fried, John H., 3,702,853.
- Szptyman, Jack J. Watercraft. 3,702,598, Cl. 114-67.00a.
- Takahashi, Kazuhiko: *See*—
  - Sawairi, Hitoshi; Kurihara, Yoshio; Takahashi, Kazuhiko; Hayakawa, Yoshihiko; and Hataya, Yukio, 3,702,968.
- Takata, Harry H., to Raygo, Inc. Earth working rotor with improved tines. 3,702,638, Cl. 172-540.000.
- Takeichi, Morio; and Ogura, Kazuhiko, to Elmo Company, Limited. Motion-picture projector for a film contained in a cartridge. 3,702,726, Cl. 352-72.000.
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  - Fujita, Saburo; Ban, Hiroshi; and Takikawa, Yukiro, 3,702,651.
- Tanaka, Kozo: *See*—
  - Matsushita, Fukusaburo; Saji, Yasuo; Saito, Kazuhisa; Tanaka, Kozo; and Yoshinari, Osamu, 3,702,880.
- Tanaka, Toshihiko; and Masuda, Shigeo, to Sumitomo Electric Industries, Ltd. Process of insulating wire by electrophoresis plus non-electrophoresis coating steps. 3,702,813, Cl. 204-181.000.
- Tanner, Allan B.; Senftle, Frank E.; and Moxham, Robert M., to United States of America, Atomic Energy Commission. Melting cryogen cooling for radiation logging probe. 3,702,932, Cl. 250-83.30r.
- Tassell, Donald E.; and Middleton, Forest L., to Lescoa, Inc. Bushing. 3,702,718, Cl. 308-72.000.
- Taylor, Fredrick James; and Choate, William C., to Texas Instruments, Incorporated. Trainable entropy system. 3,702,986, Cl. 340-172.500.
- Taylor, George G. Trading stamp invalidating apparatus and method of using. 3,702,920, Cl. 219-406.000.
- Taylor, Lloyd D., to Polaroid Corporation. Microscopic capsules and process of making same. 3,702,829, Cl. 252-316.000.
- TDK Electronics Co., Ltd.: *See*—
  - Fukui, Sakae; and Kobayashi, Hisamine, 3,702,758.
- Teed, Richard K., to Riegel Textile Corporation. Apparatus for folding and stacking flexible sheets. 3,702,696, Cl. 270-66.000.
- Teichmann, Friedrich: *See*—
  - Hengelhaupt, Hans-Georg; and Teichmann, Friedrich, 3,702,652.
- Teledyne, Incorporated: *See*—
  - Wiesler, Mordechai; Martinonis, Virgil; and Macintyre, John S., 3,702,923.
- Telesco Brophey Limited: *See*—
  - Weber, Heinz, 3,702,618.
- Tennant Company: *See*—
  - Kasper, Joseph G., 3,702,488.
- Terpstra, Garry: *See*—
  - Quinn, James A.; Owen, William J.; and Terpstra, Garry, 3,702,569.
- Texaco Inc.: *See*—
  - Cummins, Billy H.; Ashton, William B.; Coleman, Richard L.; and Odell, Norman R., 3,702,817.
  - Estes, John H.; Kravitz, Stanley; and Suggitt, Robert M., 3,702,874.
  - Schlight, Raymond C., 3,702,824.
- Texas Instruments, Incorporated: *See*—
  - Bate, Robert Thomas; and West, Forrest Gerome, Jr., 3,702,991.
  - Burch, Jack J., 3,702,929.
  - Proebsting, Robert J., 3,702,985.
  - Taylor, Fredrick James; and Choate, William C., 3,702,986.
- Thelen, William, to Bell Telephone Laboratories, Incorporated. Precision temperature control circuit with improved reliability. 3,702,921, Cl. 219-501.000.
- Thermo Electron Corporation: *See*—
  - Murphy, Preston V., 3,702,493.
- Thompson, Theodore G., to Chris-Craft Industries, Inc. Outboard motorboat with inboard mount. 3,702,485, Cl. 9-6.000.
- Thomson-CSF: *See*—
  - Brenot, Claude; and Mollard, Gaston, 3,702,562.
- Tibbs, Robert C. Painless injection device with powered plunger. 3,702,608, Cl. 128-218.00f.
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  - Giese, Emil; Maurer, Ruprecht; and Timtner, Karlheinz, 3,702,649.
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  - Smith, Wade O.; and Toft, Albert R., 3,702,808.
- Toho Beslon Co., Ltd.: *See*—
  - Matsushita, Fukusaburo; Saji, Yasuo; Saito, Kazuhisa; Tanaka, Kozo; and Yoshinari, Osamu, 3,702,880.
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  - Nolin, Roger J., 3,702,553.
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  - Swenson, Donald G.; and Trautman, George H., Jr., 3,702,558.
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  - Cosenza, Frank J., 3,702,628.
- Trinity Industries, Incorporated: *See*—
  - Berry, Van H., Jr., 3,702,661.
- Triumph Werke Nuernberg A.G.: *See*—
  - Hengelhaupt, Hans-Georg; and Teichmann, Friedrich, 3,702,652.
- TRW Inc.: *See*—
  - Heflinger, Lee Opert, 3,702,738.
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  - Nififorov, Vladimir Pavlovich; Zaitsev, Vasily Nikolaevich; Khomyakov, Viktor Stepanovich; Kil, Ilia Genrikhovich; and Tsybukov, Igor Kirillovich, 3,702,815.
- Tucker, Roy G.; Blasenak, David H.; and Johnson, Ralph W. Spray mask. 3,702,607, Cl. 128-142.700.
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  - McNamara, James Francis; and Turner, Richard Ellis, 3,702,658.
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  - Balamuth, Lewis, 3,702,948.
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  - Twyford, Robert H., 3,702,987.
- Unarco Industries, Inc.: *See*—
  - Hart, John M., 3,702,636.
- Union Carbide Corporation: *See*—
  - Koechner, Walter; Rice, Dennis Keith; and De Shazer, Larry Grant, 3,702,974.
- Union Oil Company of California: *See*—
  - Fenton, Donald M., 3,702,856.
- Uniroyal, Inc.: *See*—
  - Beckley, Addison S., 3,702,711.
- Unitec Industries, Inc.: *See*—
  - Grinups, George, 3,702,544.
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  - Hasbrouck, Augustus; and Lauck, Lawrence J., 3,702,681.
  - Provenzano, James, Jr.; Saunders, John; and Monterose, Henry, 3,702,989.
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  - Newson, Ivan Henry; and Delve, Malcolm Hoban, 3,702,807.
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  - Agriculture: *See*—
    - Conner, Charles J., 3,702,753.
    - Pittman, Allen G.; and Wasley, William L., 3,702,859.
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    - Yatsu, Lawrence Y.; Jacks, Thomas J.; and Hensarling, Thomas P., 3,702,857.
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    - Erbert, Virgil, 3,702,589.
    - Erickson, Gerald L., 3,702,936.
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    - Huebotter, Paul R., 3,702,803.
    - Jansen, George, Jr., 3,702,802.
    - Land, Cecil E.; and Smith, Willis D., 3,702,724.
    - Moses, Harry; Eggenberger, Delbert N.; Halverson, Steven L.; and Managan, William W., 3,702,565.
    - Tanner, Allan B.; Senftle, Frank E.; and Moxham, Robert M., 3,702,932.
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    - Campbell, Richard A., 3,702,575.
    - Faget, Maxime A., 3,702,688.
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    - Freche, John C.; Waters, William J.; and Ashbrook, Richard L., 3,702,791.
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    - Kosmahl, Henry G., 3,702,951.
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    - Odum, William T.; Elkins, James H.; and Coggings, Thomas M., 3,702,597.
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  - Porter, Lawrence C.; and Graves, Kenneth E., 3,702,747.
  - Van Rheenen, Verlan H., 3,702,848.
- Urban, Friedrich: *See*—
  - Steigerwald, Klaus; Buechner, Oskar; Urban, Friedrich; and Pfannmueller, Helmut, 3,702,845.
- U.S. Philips Corporation: *See*—
  - Dirne, Adrianus Petrus; Asselman, George Albert Apolonia; and van der As, Herman Henricus Maria, 3,702,533.
  - Kraakman, Hillebrand Johannes Josephus, 3,702,909.
  - Neuhaus, Hans Wilhelm; and Verweel, Jan, 3,702,993.
- Uzina de Autocamioane "Steagul Rosu" Brasov: *See*—
  - Dobosan, Valeriu; and Cascaval, Nicolae, 3,702,916.
- Vallancourt, Ronald J.: *See*—
  - Daly, William F.; and Vallancourt, Ronald J., 3,702,605.
- van der As, Herman Henricus Maria: *See*—
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- Van Rheenen, Verlan H., to Upjohn Company, The. Process for the conversion of 3-enol ethers of 3-keto-Δ^4-steroids unsubstituted at C_4 and C_6 to the corresponding 3-keto-Δ^4-6 β-(N-disubstituted) aminomethyl compounds. 3,702,848, Cl. 260-239.500.
- Van Saun, Richard W., to Fluke, John, Mfg. Co., Inc. Analog to digital converter and indicator using recirculation of remainder. 3,703,002, Cl. 340-347.0ad.
- Van Steveninck, Johannes, to Shell Oil Company. Apparatus and method for burying pipeline. 3,702,540, Cl. 61-72.400.
- Vanguard Industries, Inc.: *See*—
  - Herolzer, Ralph H., 3,702,599.
- Vaughn, George A.; and Hargrave, Richard D., to Maark Corporation. Metal tennis racket with plastic throat piece and molded plastic handle. 3,702,701, Cl. 273-73.00h.
- Vaughn, James R., to Dow Corning Corporation. Method of polishing leather with compositions containing reaction product of hydroxy endblocked siloxanes and aminofunctional silanes. 3,702,769, Cl. 106-10.000.
- Verweel, Jan: *See*—
  - Neuhaus, Hans Wilhelm; and Verweel, Jan, 3,702,993.
- Vessot, Robert F. C.: *See*—
  - United States of America, National Aeronautics and Space Administration, 3,702,972.
- Vette, Carl W.: *See*—
  - Schmitt, Peter C.; Vette, Carl W.; and Meyer, Amos J., II, 3,702,899.
- Vibration & Noise Engineering Corporation: *See*—
  - Fowler, Neal V., Jr.; Gallagher, Arthur P.; and Chance, Calvin L., Jr., 3,702,644.
- Victor Company of Japan, Ltd.: *See*—
  - Hidaka, Tsuneyoshi; and Honjo, Yoshihiko, 3,702,897.
- Vigo, Tyrone L.; Margavio, Matthew F.; and Welch, Clark M., to United States of America, Agriculture. Fibrous (carboxyalkylthio)- and (carboxyarylthio chlorodeoxycelluloses and method of preparation. 3,702,754, Cl. 8-120.000.
- Vilkas, Eugene P.; and Kazlauskas, Gasparas, to Astro-Arc Co. Automatic melt-thru welding method and apparatus. 3,702,915, Cl. 219-137.000.
- Virsbreg, Lars-Goran, to Allmanna Svenska Elektriska Aktiebolaget. Method of manufacturing a coil. 3,702,499, Cl. 29-605.000.
- Von Der Eltz, Hans-Ulrich; and Weckler, Gerhard. Auxiliaries for cleaning cylinders and rollers of dyeing and drying aggregates in textile plants. 3,702,825, Cl. 252-89.000.
- Vsesojuzny Nauchno-Issledovatelsky i Proektny Institut aljuminievoi, magnievoi i Flektrodnoi promyshlennosti: *See*—
  - Nififorov, Vladimir Pavlovich; Zaitsev, Vasily Nikolaevich; Khomyakov, Viktor Stepanovich; Kil, Ilia Genrikhovich; and Tsybukov, Igor Kirillovich, 3,702,815.
- Vyzkumny Ustav Pletarsky: *See*—
  - Peschl, Ervin, 3,702,547.
- Wada, Toshio: *See*—
  - Nakanuma, Sho; and Wada, Toshio, 3,702,790.
- Wagensonner, Eduard: *See*—
  - Winkler, Alfred; and Wagensonner, Eduard, 3,702,728.
- Wagner, George M., to Hooker Chemical Corporation. Process for shrinkproofing wool and resultant product. 3,702,776, Cl. 117-62.200.
- Wahnschaffe, Klaus-Dieter. Electromagnetic relay. 3,702,981, Cl. 335-133.000.
- Wakai, Shuzo. Astable multi-vibrator. 3,702,978, Cl. 331-113.00r.
- Wakamatsu, Hisato; Kitano, Akira; and Kawai, Hisasi, to Nippondenso Kabushiki Kaisha. Automatic transmission control system for automobile. 3,702,572, Cl. 74-866.000.
- Walbridge, Derek John, to Imperial Chemical Industries Limited Polymer dispersions. 3,702,836, Cl. 260-29.10r.
- Waldkotter, Erich: *See*—
  - Mosch, Willi; Lutz, Gerhard; Putter, Lothar; Waldkotter, Erich; and Martin, Heinz, 3,702,954.
- Walter, Marc: *See*—
  - Zeter, Francois; Bellardy, Roger; Pouligny, Claude; and Walter, Marc, 3,702,529.
- Wasagchemie GmbH: *See*—
  - Nolte, Helmuth; Lindemann, Paul; and Hahn, Walter, 3,702,792.
- Washington, Le Baron H.: *See*—
  - Gutterman, Robert P.; and Washington, Le Baron H., 3,702,656.
- Wasley, William L.: *See*—
  - Pittman, Allen G.; and Wasley, William L., 3,702,859.
  - Pittman, Allen G.; and Wasley, William L., 3,702,870.
- Watanabe, Hideaki: *See*—
  - Kohno, Shigeharu; Komaki, Tatsuo; and Watanabe, Hideaki, 3,702,867.
- Waters, William J.: *See*—
  - Freche, John C.; Waters, William J.; and Ashbrook, Richard L., 3,702,791.
- Watson, David D.: *See*—
  - Brown, Lloyd H.; and Watson, David D., 3,702,771.
- Watson, James W.; and Payne, Billy D., to SCM Corporation. Method for catalyzing polyurea coatings. 3,702,777, Cl. 117-72.000.
- Watts, Peter J. Bite detectors for use with fishing lines. 3,702,513, Cl. 43-17.000.
- Wean United, Inc.: *See*—
  - Amend, William P., 3,702,557.
  - Greenberger, Joseph Irwin, 3,702,912.
  - Shumaker, Charles Storer, 3,702,554.
- Webb, Darrow L., to United States of America, National Aeronautics and Space Administration. Electronic video editor. 3,702,898, Cl. 178-6.000.
- Weber, Heinz, to Telesco Brophey Limited. Collapsible umbrella. 3,702,618, Cl. 135-25.00r.
- Weckler, Gerhard: *See*—
  - Von Der Eltz, Hans-Ulrich; and Weckler, Gerhard, 3,702,825.
- Weidel, Joseph C., to Rohr Industries, Inc. Quick replacement mechanism for mounting dies in press. 3,702,560, Cl. 72-481.000.
- Welch, Clark M.: *See*—
  - Vigo, Tyrone L.; Margavio, Matthew F.; and Welch, Clark M., 3,702,754.
- Wessells, Forrest A.; and Gush, Donald P., to Grace, W. R., & Co. Apparatus for ultrasonic etching of polymeric printing plates. 3,702,795, Cl. 156-345.000.
- Wesselmann, Rudolf: *See*—
  - Sennewald, Kurt; Wesselmann, Rudolf; Holler, Ernst; and Muller, Heinz, 3,702,887.
- West, Forrest Gerome, Jr.: *See*—
  - Bate, Robert Thomas; and West, Forrest Gerome, Jr., 3,702,991.
- Western Electric Company, Incorporated: *See*—
  - Cassidy, Glenn; Hartman, Donald A.; Hentz, Lyle J.; and Horn, William D., 3,702,952.
  - Stetzler, Grant F., 3,702,970.
- Western Geophysical Company of America: *See*—
  - Mollere, John C., 3,702,984.
- Western Gold & Platinum Company: *See*—
  - Garner, Nicholas T.; and Richardson, James G., 3,702,763.
- Westinghouse Air Brake Company: *See*—
  - Darrow, John O. G., 3,702,939.

  - Ryburn, Kenneth D.; McClone, Robert J.; and Fox, Charles H., 3,702,715.
- Westvaco Corporation: *See—*
  - De Matte, Michael L., 3,702,801.
- Wever, Ray: *See—*
  - Beasley, Noel F.; and Wever, Ray, 3,702,515.
- Whirlpool Corporation: *See—*
  - Lyman, John B., 3,702,543.
- Widlar, Robert J.: *See—*
  - Kalb, Jeffrey C.; and Widlar, Robert J., 3,702,955.
- Wieder, Horst F.: *See—*
  - Bredereck, Hellmut F. I.; Iliopulos, Miltiadis I.; and Wieder, Horst F., 3,702,879.
- Wiesler, Mordechai; Martinonis, Virgil; and Macintyre, John S., to Teledyne, Incorporated. Die sorting system. 3,702,923, Cl. 235-61.11e.
- Wiggins, Robert L.: *See—*
  - Genyk, Walter; Martin, Raymond E.; Swift, George B.; Wiggins, Robert L.; and Wolfe, Raymond W., 3,702,510.
- Willis, John R., to Electromitor, Inc. Telephone dialing equipment. 3,702,902, Cl. 179-5.00r.
- Willyoung, David M.: *See—*
  - Kudlacik, Henry W.; and Willyoung, David M., 3,702,964.
- Wilson, Donald Richard, to Du Pont de Nemours, E. I., and Company. Lewis acid catalyzed diacyl chloride-diphenol polyesterification. 3,702,838, Cl. 260-47.00c.
- Winkler, Alfred: *See—*
  - Kremp, Rudolf; Winkler, Alfred; and Hennig, Fridolin, 3,702,729.
- Winkler, Alfred; and Wagensonner, Eduard, to Agfa-Gevaert Aktiengesellschaft. Automatic switching arrangement for motion picture film projectors. 3,702,728, Cl. 352-92.000.
- Winther, John L. Incinerator sludge concentrator combination. 3,702,596, Cl. 110-8.00r.
- Wirth, David G., Jr.: *See—*
  - Rettew, Richard R.; Wirth, David G., Jr.; and Glemza, Rimántas, 3,702,882.
- Wisconsin Alumni Research Foundation: *See—*
  - De Luca, Hector F.; and Suda, Tatsuo, 3,702,810.
- Withers, James C., to General Technologies Corporation. Process of plating by pyrolytic deposition. 3,702,780, Cl. 117-104.00r.
- Woehler, Harold L., to Fedders Corporation. Gentle wash mechanism for a dishwasher. 3,702,680, Cl. 239-256.000.
- Wohr, Rolf; and Gotz, Eckart, to Bosch, Robert, GmbH. AC to DC rectifier circuit with rapid turn-off in case of over current through the load circuit. 3,702,962, Cl. 321-14.000.
- Wolfe, Raymond W.: *See—*
  - Genyk, Walter; Martin, Raymond E.; Swift, George B.; Wiggins, Robert L.; and Wolfe, Raymond W., 3,702,510.
- Wolfendale, Peter Caleb Frederick. Variable capacitance displacement transducers. 3,702,957, Cl. 317-246.000.
- Wolfer, Allan J.; and Cooper, Edward, to Eastman Kodak Company, mesne. Adaptive synchronizing apparatus for handling phase encoded binary information. 3,702,996, Cl. 340-174.10h.
- Womble, George E.; and Cleveland, Rex, to Kewanee Machinery & Conveyor Co. Spring biased coupling member on a disk gang for driving engagement with a folding wing gang coupling member. 3,702,639, Cl. 172-568.000.
- Wood, Barry Bertram. Split handle jack knife. 3,702,501, Cl. 30-153.000.
- Wood, Bernard J., to Stanford Research Institute. Catalytic conversion of alkanes and olefins to a preselected olefin isomer. 3,702,876, Cl. 260-683.200.
- Wood, Daniel J., and Wood, Harold E. Backing member for checks. 3,702,924, Cl. 235-61.12r.
- Wood, Harold E.: *See—*
  - Wood, Daniel J.; and Wood, Harold E., 3,702,924.
- Wood, John W., Jr., to Group 128, Incorporated. Apparatus for recording or viewing skin ridge patterns. 3,702,731, Cl. 355-18.000.
- Wooddy, Lemuel Dale, Jr.: *See—*
  - Cunningham, Gerald Robert; and Wooddy, Lemuel Dale, Jr., 3,702,657.
- Woskow, Marvin Z.: *See—*
  - Manning, Harold E.; Woskow, Marvin Z.; and Christmann, Harold F., 3,702,875.
- Woythal, Gilbert S.: *See—*
  - Zernov, Peter; and Woythal, Gilbert S., 3,702,673.
- Wulff, Harald P.: *See—*
  - Bell, Charles S.; and Wulff, Harald P., 3,702,855.
- X-4 Corporation, The: *See—*
  - Schnepel, Lawrence S., 3,702,546.
- Yale, Harry Louis; and Petigara, Remesh, to Squibb, E. R., & Sons, Inc., mesne. Carboxylated dibenzoxazepines and dibenzothiazepines. 3,702,852, Cl. 260-327.00b.
- Yamanaka, Sadajiro, to Yugen Kaisha Yamanaka Seisakusho. Automatic grinding apparatus for magnetic heads. 3,702,518, Cl. 51-165.800.
- Yamanouchi, Teruo: *See—*
  - Kinjo, Kikuo; Yamanouchi, Teruo; Kondo, Eiichi; Matsuno, Hiroshi; and Nishide, Katsuhiko, 3,702,764.
- Yan, Tsoung-Yuan: *See—*
  - Streed, Carl W.; and Yan, Tsoung-Yuan, 3,702,818.
- Yatsu, Lawrence Y.; Jacks, Thomas J.; and Hensarling, Thomas P., to United States of America, Agriculture. Decolorization of cottonseed oil with ferric chloride. 3,702,857, Cl. 260-426.000.
- Yeomans, Bertram, to BP Chemicals (U.K.) Limited. Production of organic acids. 3,702,834, Cl. 260-537.00r.
- Yoshinari, Osamu: *See—*
  - Matsushita, Fukusaburo; Saji, Yasuo; Saito, Kazuhisa; Tanaka, Kozo; and Yoshinari, Osamu, 3,702,880.
- Yost, Marshall E.: *See—*
  - Dunham, Kenneth R.; Newcomb, Richard A.; and Yost, Marshall E., 3,702,766.
- Young, Charles G., to American Optical Corporation. Glass peripherally multi-arcuate disc laser. 3,702,976, Cl. 331-94.500.
- Young, Edward John: *See—*
  - Baxendale, Albert Edward; and Young, Edward John, 3,702,603.
- Young, William O., Jr., to Deering Milliken Research Corporation. Pull tab paper. 3,702,654, Cl. 206-59.00f.
- Yugen Kaisha Yamanaka Seisakusho: *See—*
  - Yamanaka, Sadajiro, 3,702,518.
- Yutaka, Kohtani: *See—*
  - Goshima, Takeshi; Iwawaki, Yasutaka; and Yutaka, Kohtani, 3,702,506.
- Zachar, James E.: *See—*
  - Haney, Ralph D.; Zachar, James E.; and Drozd, Charles J., 3,702,988.
- Zaitsev, Vasily Nikolaevich: *See—*
  - Nififorov, Vladimir Pavlovich; Zaitsev, Vasily Nikolaevich; Khomyakov, Viktor Stepanovich; Kil, Ilia Genrikhovich; and Tsybukov, Igor Kirillovich, 3,702,815.
- Zauchner, Joseph: *See—*
  - Picciano, James K.; and Zauchner, Joseph, 3,702,926.
- Zeller, Alfred. Apparatus for gripping and pulling an elongated flexible element. 3,702,689, Cl. 254-107.000.
- Zenith Radio Corporation: *See—*
  - Reynolds, Wayne H., 3,702,958.
- Zerand Corporation: *See—*
  - Zernov, Peter; and Woythal, Gilbert S., 3,702,673.
- Zernov, Peter; and Woythal, Gilbert S., to Zerand Corporation Web-handling mechanism for controlling web speed. 3,702,673, Cl. 226-4.000.
- Zeter, Francois; Bellardy, Roger; Pouligny, Claude; and Walter, Marc, to Societe Fabrique de Horlogerie la Vedette Saverne Societe Jaz S. A. Striking mechanisms for clocks. 3,702,529, Cl. 58-9.000.
- Zowaski, Jeanne: *See—*
  - Zowaski, Joseph G., 3,702,509.
- Zowaski, Joseph G.; deceased (Zowaski, Jeanne; Administratrix). Trenching machine with tapered buckets. 3,702,509, Cl. 37-97.000.
- 11/14/72: *See—*
  - Trabbic, Geraldw.; 11/14/72; and Managan, William W., 3,704,588.

LIST OF DESIGN PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF NOVEMBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with **city and** telephone directory practice).

- Achushnet Co.: *See—*
  - Viera, Anthony A., Woolley, and Jepson. 225,123.
- Adkinson, Joseph E. Dresser or the like. 225,138, 11–14–72, Cl. D6—164.
- Anderson, Eldon L., Jr., to General Electric Co. Luminaire. 225,125, 11–14–72, Cl. D48—23.
- Bardahl Mfg. Corp.: *See—*
  - Marchetti, Giovanni. 225,101.
- Bell Telephone Laboratories, Inc.: *See—*
  - Genaro, Donald M., McGarvey, and Rosebrock. 225,113.
- Benty, John L., and D. Friedman, to Clairol Inc. Heater housing for hair curlers. 225,132, 11–14–72, Cl. D86—10.
- Bialo, Walter. Flight luggage bag. 225,134, 11–14–72, Cl. D87—5.
- Bombardier Ltd.: *See—*
  - MacKeen, Anthony D., and Lapointe. 225,105.
- Brainerd, Andrew W., K. H. and S. W. Shoe cleaning-polishing device. 225,133, 11–14–72, Cl. D86—11.
- Brainerd, Kent H.: *See—*
  - Brainerd, Andrew W., K. H. and S. W. 225,133.
- Brainerd, Stuart W.: *See—*
  - Brainerd, Andrew W., K. H. and S. W. 225,133.
- Branson Instruments, Inc.: *See—*
  - Parry, Frank, and Savio. 225,110.
- Brys, Stanley. Citrus fruit rind cutter. 225,135, 11–14–72, Cl. D89—1.
- Certain-Teed Saint Gobain Insulating Corp.: *See—*
  - Hoffman, George A., Jr. 225,129.
- Child, George M. Display stand or the like. 225,096, 11–14–72, Cl. D6—85.
- Clairol Inc.: *See—*
  - Benty, John L., and Friedman. 225,132.
- Coleman, Clarence B., H. B. Kattelmann, to Fabricated Metals, Inc. Liquid level indicator for a storage bin. 225,126, 11–14–72, Cl. D52—6.
- Colson, James B., Sr.: *See—*
  - Evanoff, Thomas V., Segal, and Colson. 225,117.
- Dassler, Adolf. Casual shoe or the like. 225,093, 11–14–72, Cl. D2—310.
- Electrosil Ltd.: *See—*
  - Trickey, Ronald H. 225,108.
- Evanoff, Thomas V., J. S. Segel, and J. B. Colson, Sr.: said Segal and said Colson assignors to said Evanoff. Set of chess men. 225,117, 11–14–72, Cl. D34—5.
- Colson, James B., Sr.: *See—*
  - Evanoff, Thomas V., Segel, and Colson. 225,117.
- Fabricated Metals, Inc.: *See—*
  - Coleman, Clarence B., and Kattelmann. 225,126.
- Flider, Frank S., to The Justrite Mfg. Co. Battery case. 225,109, 11–14–72, Cl. D26—6.
- Friedman, Daniel: *See—*
  - Benty, John L., and Friedman. 225,132.
- Genaro, Donald M., J. N. McGarvey, and F. A. Rosebrock, to Bell Telephone Laboratories, Inc. Video telephone unit. 225,113, 11–14–72, Cl. D26—14.
- General Electric Co.: *See—*
  - Anderson, Eldon L., Jr. 225,125.
- Gillette Co., The: *See—*
  - Perry, Roger L. 225,137.
- Goodyear Tire & Rubber Co., The: *See—*
  - Sayers, Russell N., and Roberts. 225,136.
- Graco Inc.: *See—*
  - Salchow, Bernard C. 225,127.
- Gregor, Vaughn. Conveyor bucket. 225,128, 11–14–72, Cl. D55—1.
- Greiner Electronic AG.: *See—*
  - Wiedmann, Gerhard. 225,110.
- Gutierrez, Julian. Phonograph record holder. 225,097, 11–14–72, Cl. D6—185.
- Hardman, Von A. Horse barn. 225,103, 11–14–72, Cl. D13—1.
- Hardman, Von A. Horse barn. 225,104, 11–14–72, Cl. D13—1.
- Harper, Robert T., Jr.: *See—*
  - Rangel, George G., and Harper. 225,102.
- Hoffman, George A., Jr., to Certain-Teed Saint Gobain Insulation Corp. Faced thermal insulation batting. 225,129, 11–14–72, Cl. D59—10.
- Jepson, John W.: *See—*
  - Viera, Anthony A., Woolley, and Jepson. 225,123.
- Jet-X Corp.: *See—*
  - Proctor, Rudy R. and D. L. 225,120.
- Justrite Mfg. Co., The: *See—*
  - Flider, Frank S. 225,109.
- Kabushiki Kaisha Daimi Seikosha: *See—*
  - Osawa, Eiichi. 225,124.
- Kattelmann, Harry B.: *See—*
  - Coleman, Clarence B., and Kattelmann. 225,126.
- Kodaira, Yasuo, Nihon Kaiheiki Kogyo Kabushiki Kaisha. Switch. 225,111, 11–14–72, Cl. D26—13.
- Krajesti, Alexander. Combined paint box stand and easel. 225,116, 11–14–72, Cl. D29—20.
- Lansburg Electro-Coating Corp.: *See—*
  - Scharfenberger, James A., and Snyder. 225,107.
- Lapointe, Yves A.: *See—*
  - MacKeen, Anthony D., and Lapointe. 225,105.
- MacKeen, Anthony D., and Y. A. Lapointe, to Bombardier Ltd. Snowmobile. 225,105, 11–14–72, Cl. D14—24.
- Maijala, William R. Convertible motor bicycle. 225,106, 11–14–72, Cl. D14—24.
- Marchetti, Giovanni, to Bardahl Mfg. Corp. Container for liquids or the like. 225,101, 11–14–72, Cl. D9—175.
- Mashburn, Joseph B. Pet sleeping bag. 225,121, 11–14–72, Cl. D30—1.
- McGarvey, John N.: *See—*
  - Genaro, Donald M., McGarvey, and Rosebrock. 225,113.
- Mulligan, Robert J., to Richardson-Merrell Inc. Display box 225,098, 11–14–72, Cl. D9—235.
- Nihon Kaiheiki Kogyo Kabushiki Kaisha: *See—*
  - Kodaira, Yasuo. 225,111.
- Osawa, Eiichi, to Kabushiki Kaisha Daimi Seikosha. Wristwatch. 225,124, 11–14–72, Cl. D42—8.
- Pachter, Victor. Smoking pipe cleaner. 225,130, 11–14–72, Cl. D85—7.
- Parry, Frank, and D. M. Savio, to Branson Instruments, Inc. Ultrasonic seaming apparatus. 225,110, 11–14–72, Cl. D26—1.
- Perry, Roger L. to The Gillette Co. Safety razor blade assembly. 225,137, 11–14–72, Cl. D95—3.
- Proctor, Denver L.: *See—*
  - Proctor, Rudy R. and D. L. 225,120.
- Proctor, Rudy R. and D. L., to Jet-X Corp. Walking horse toy. 225,120, 11–14–72, Cl. D34—15.
- Rangel, George G., and R. T. Harper, Jr. Modular structure. 225,102, 11–14–72, Cl. D13—1.
- Richardson-Merrell Inc.: *See—*
  - Mulligan, Robert J. 225,098.
- Roberts, Charles W.: *See—*
  - Sayers, Russell N., and Roberts. 225,136.
- Rogers, Robin, to Laurence M. Walker. Religious medallion. 225,115, 11–14–72, Cl. D29—19.
- Romas, Sakratis: *See—*
  - Zougas, Petros. 225,099.
- Rosebrock, Frederick A.: *See—*
  - Genaro, Donald M., McGarvey, and Rosebrock. 225,113.
- Russo, Michael T. Link chain support post. 225,114, 11–14–72, Cl. D28—1.
- Salchow, Bernard C., to Grayco Inc. Hydraulic motor. 225,127, 11–14–72, Cl. D55—1.
- Savio, Dino M.: *See—*
  - Parry, Frank, and Savio. 225,110.
- Sayers, Russell N. and C. W. Roberts, to The Goodyear Tire & Rubber Co. Tire 225,136, 11–14–72, Cl. D90—20.
- Scampoli, Anthony. Dancing figure toy. 225,122, 11–14–72, Cl. D34—15.
- Scharfenberger, James A., and J. R. Snyder, to Lansburg Electro-Coating Corp. Coating material sheath for a spray coating apparatus. 225,107, 11–14–72, Cl. D23—36.
- Segel, Jack S.: *See—*
  - Evanoff, Thomas V., Segel, and Colson. 225,117.
- Snyder, John R.: *See—*
  - Scharfenberger, James A., and Snyder. 225,107.
- Susilovich, Vladimir M. Golf club putter head. 225,118, 11–14–72, Cl. D34—5.
- Tartar, Stanley. Money tree bank. 225,119, 11–14–72, Cl. D34—11.
- Trickey, Ronald H., to Electrosil Ltd. Electrical connector primarily intended for connection to a dual-in-line integrated circuit. 225,108, 11–14–72, Cl. D26—1.
- Viera, Anthony A., E. R. Woolley, and J. W. Jepson, to Acushnet Co. Golf club head. 225,123, 11–14–72, Cl. D34—5.
- Walker, Laurence M.: *See—*
  - Rogers, Robin. 225,115.
- Weidmann, Gerhard, to Greiner Electronic AG. Bottle or similar article. 225,100, 11–14–72, Cl. D9—18.
- Woolley, Edward R.: *See—*
  - Viera, Anthony A., Woolley, and Jepson. 225,123.
- Yeomans, Ralph F. Audio frequency equalizer. 225,112, 11–14–72, Cl. D26—14.
- Zakarin, Melvin. Sash. 225,094, 11–14–72, Cl. D2—385.
- Zakarin, Melvin. Belt. 225,095, 11–14–72, Cl. D2—385.
- Zakarin, Melvin V. Head band. 225,131, 11–14–72, Cl. D86—10.
- Zougas, Petros, assignor of a fractional part interest to Sakratis Romas. Scissors with force multipliers. 225,099, 11–14–72, Cl. D8—61.

CLASSIFICATION OF PATENTS

ISSUED NOVEMBER 14, 1972

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 5	
348WB	3,702,484
CLASS 8	
2.5	3,702,752
52	3,702,753
120	3,702,754
CLASS 9	
6	3,702,485
11A	3,702,486
CLASS 13	
1	3,702,894
CLASS 15	
22R	3,702,487
50C	3,702,488
88	3,702,489
250.42	3,702,490
CLASS 16	
189	3,702,491
CLASS 23	
253TP	3,702,755
277C	3,702,756
CLASS 28	
72HR	3,702,492
CLASS 29	
225	3,702,494
428	3,702,495
472.9	3,702,496
474.3	3,702,497
592	3,702,493
596	3,702,498
605	3,702,499
628	3,702,500
CLASS 30	
153	3,702,501
CLASS 33	
185R	3,702,502
CLASS 34	
114	3,702,503
CLASS 35	
12W	3,702,504
34	3,702,505
35C	3,702,506
39	3,702,507
59	3,702,508
CLASS 37	
97	3,702,509
CLASS 40	
209	3,702,510
306	3,702,511
CLASS 43	
15	3,702,512
17	3,702,513
24	3,702,514
CLASS 44	
58	3,702,757
CLASS 46	
232	3,702,515
CLASS 48	
206	3,702,516
CLASS 49	
504	3,702,517
CLASS 51	
165.8	3,702,518
298	3,702,758
310	3,702,519
CLASS 52	
36	3,702,521
284	3,702,520
476	3,702,522
583	3,702,523
CLASS 53	
61	3,702,524
CLASS 55	
25	3,702,525
102	3,702,526
440	3,702,527
CLASS 57	
75	3,702,528
CLASS 58	
9	3,702,529
85.5	3,702,530
126E	3,702,531
CLASS 60	
23	3,702,532
24	3,702,533
36	3,702,534
54.5R	3,702,535
211	3,702,536
CLASS 61	
46.5	3,702,537
64	3,702,538
72.3	3,702,539
72.4	3,702,540
CLASS 62	
26	3,702,541
66	3,702,542
354	3,702,543
414	3,702,544
CLASS 64	
11R	3,702,545
29	3,702,546
CLASS 66	
86	3,702,547
154R	3,702,548
CLASS 70	
134	3,702,549
252	3,702,550
269	3,702,551
346	3,702,552
375	3,702,553
CLASS 71	
77	3,702,759
106	3,702,760
CLASS 72	
21	3,702,554
60	3,702,555
	3,702,556
238	3,702,557
345	3,702,559
389	3,702,558
481	3,702,560
CLASS 73	
1E	3,702,562
1F	3,702,561
12	3,702,563
73	3,702,564
170R	3,702,565
204	3,702,566
487	3,702,567
CLASS 74	
5	3,702,568
5.47	3,702,569
242.15R	3,702,570
341	3,702,571
866	3,702,572
CLASS 75	
.5AA	3,702,761
66	3,702,762
173R	3,702,763
CLASS 76	
101A	3,702,573
CLASS 90	
13B	3,702,574
CLASS 91	
363A	3,702,575
487	3,702,576
CLASS 92	
15	3,702,577
CLASS 94	
45R	3,702,578
CLASS 95	
11L	3,702,582
13	3,702,579
	3,702,580
89R	3,702,581
CLASS 96	
1.5	3,702,764
33	3,702,765
75	3,702,766
127	3,702,767
CLASS 99	
136	3,702,768
335	3,702,583
CLASS 100	
151	3,702,584
CLASS 101	
1	3,702,585
142	3,702,586
207	3,702,587
CLASS 102	
35.6	3,702,588
70	3,702,589
CLASS 104	
105	3,702,590
CLASS 106	
10	3,702,769
39R	3,702,770
55	3,702,771
270	3,702,772
300	3,702,773
CLASS 108	
31	3,702,591
CLASS 109	
29	3,702,592
80	3,702,593
CLASS 110	
8R	3,702,594
	3,702,595
	3,702,596
CLASS 114	
16.8	3,702,597
67A	3,702,598
CLASS 117	
5.1	3,702,774
35R	3,702,775
62.2	3,702,776
72	3,702,777
75	3,702,778
102R	3,702,779
104R	3,702,780
118	3,702,781
	3,702,782
126GS	3,702,783
149	3,702,784
155UA	3,702,785
212	3,702,786
213	3,702,787
230	3,702,788
CLASS 119	
4	3,702,599
82	3,702,600
CLASS 123	
32EA	3,702,601
45R	3,702,602
97B	3,702,603
CLASS 125	
14	3,702,604
CLASS 128	
1R	3,702,605
17	3,702,606
214R	3,702,607
218F	3,702,608
	3,702,609
284	3,702,610
305	3,702,611
350R	3,702,612
417	3,702,613
476	3,702,614
CLASS 131	
2	3,702,615
CLASS 132	
9	3,702,616
CLASS 134	
5	3,702,789
CLASS 135	
1A	3,702,617
25R	3,702,618
CLASS 137	
3	3,702,619
68	3,702,620
85	3,702,621
107	3,702,622
495	3,702,623
512	3,702,624
CLASS 141	
1	3,702,625
CLASS 143	
32P	3,702,626
CLASS 145	
33A	3,702,627
CLASS 148	
1.5	3,702,790
11.5R	3,702,791
CLASS 149	
1	3,702,793
10	3,702,792
CLASS 151	
21B	3,702,628
CLASS 156	
310	3,702,794
345	3,702,795
512	3,702,796
CLASS 161	
66	3,702,797
170	3,702,798
CLASS 162	
168	3,702,799
	3,702,800
173	3,702,801
CLASS 164	
76	3,702,629
260	3,702,630
274	3,702,631
CLASS 165	
152	3,702,632
159	3,702,633
CLASS 166	
299	3,702,635
315	3,702,634
CLASS 169	
2R	3,702,636
31R	3,702,637
CLASS 172	
540	3,702,638
568	3,702,639
CLASS 174	
19	3,702,895
CLASS 175	
85	3,702,640
CLASS 176	
38	3,702,802
40	3,702,803
CLASS 178	
5.2R	3,702,896
5.4HE	3,702,897
6	3,702,898
7.2	3,702,899
53.1	3,702,900
CLASS 179	
1G	3,702,901
2A	3,702,904
5R	3,702,902
18DA	3,702,903
90BD	3,702,905
100.2D	3,702,906
100.2S	3,702,908
100.2Z	3,702,907
CLASS 180	
14R	3,702,641
44M	3,702,642
127	3,702,643
CLASS 181	
50	3,702,644
CLASS 187	
18	3,702,645
CLASS 188	
280	3,702,646
283	3,702,647
CLASS 192	
4C	3,702,648
41A	3,702,649
70.25	3,702,651
CLASS 193	
34	3,702,650
CLASS 195	
63	3,702,804
66R	3,702,805
139	3,702,806
CLASS 197	
151	3,702,652
CLASS 200	
83R	3,702,909
84R	3,702,910
144B	3,702,911
CLASS 202	
174	3,702,807
CLASS 204	
15	3,702,808
	3,702,809
158R	3,702,810
	3,702,811
159.24	3,702,812
181	3,702,813
237	3,702,814
243R	3,702,815
CLASS 206	
42	3,702,653
59F	3,702,654
CLASS 208	
50	3,702,816
87	3,702,817
89	3,702,818
112	3,702,874
127	3,702,819
CLASS 209	
80	3,702,655
156	3,702,656
CLASS 210	
22	3,702,820
37	3,702,821
242	3,702,657
321	3,702,658
343	3,702,659
CLASS 214	
1QE	3,702,660
152	3,702,661
302	3,702,662
CLASS 219	
10.61	3,702,912
60A	3,702,913
73	3,702,914
125R	3,702,916
137	3,702,915
230	3,702,917
370	3,702,918
393	3,702,919
406	3,702,920
501	3,702,921
CLASS 221	
167	3,702,663
185	3,702,664
301	3,702,665
CLASS 222	
129.4	3,702,666
145	3,702,667
182	3,702,668
402.16	3,702,669
CLASS 224	
4D	3,702,670
20	3,702,671
CLASS 225	
106	3,702,672
CLASS 226	
4	3,702,673
CLASS 228	
1	3,702,674
CLASS 229	
7R	3,702,675
14C	3,702,676
CLASS 235	
61.11E	3,702,923
61.12R	3,702,924
61.6R	3,702,922
98R	3,702,925
154	3,702,926
158	3,702,927
CLASS 239	
55	3,702,677
206	3,702,678
222.11	3,702,679
256	3,702,680
265.37	3,702,681
412	3,702,684
533	3,702,685
585	3,702,683
CLASS 240	
1.4	3,702,928
41R	3,702,929
41.35R	3,702,930
122	3,702,931
CLASS 241	
59	3,702,686
CLASS 242	
56.9	3,702,687
CLASS 244	
1SS	3,702,688
CLASS 250	
51.5	3,702,933
52	3,702,934
58	3,702,935
83.3R	3,702,932
83.6R	3,702,936
210	3,702,937
CLASS 252	
37	3,702,822
49.6	3,702,823
49.8	3,702,824
89	3,702,825
99	3,702,826
301.4R	3,702,828
316	3,702,829
404	3,702,830
408	3,702,831
423	3,702,832
441	3,702,827
CLASS 254	
107	3,702,689
187	3,702,690
CLASS 259	
192	3,702,691
CLASS 260	
2P	3,702,833
2.5AM	3,702,834
2.5F	3,702,841
18S	3,702,835
29.1R	3,702,836
45.8N	3,702,837
47C	3,702,838
77.5AB	3,702,839
80.78	3,702,840
88.2C	3,702,842
91.3VA	3,702,843
	3,702,844
94.9R	3,702,845
169	3,702,846
233.3R	3,702,847
239.5	3,702,848
268C	3,702,849
294.8G	3,702,850
326.3	3,702,851
327B	3,702,852
343.3	3,702,853
346.2R	3,702,854
348.5L	3,702,855
410.9R	3,702,856
426	3,702,857
429.7	3,702,858
448.2B	3,702,859
448.8R	3,702,860
465E	3,702,861
465F	3,702,862
471A	3,702,863
473A	3,702,864
485J	3,702,865
501.11	3,702,866
514R	3,702,867
533R	3,702,868
610A	3,702,869
617R	3,702,870
623R	3,702,871
633	3,702,872
672R	3,702,873

CLASSIFICATION OF PATENTS

680F 3,702,875
683 2 3,702,876
857D 3,702,877
936 3,702,878
953 3,702,879

CLASS 263
6R 3,702,692

CLASS 264
38 3,702,880
66 3,702,881

CLASS 266
4S 3,702,693
27 3,702,694
34T 3,702,695

CLASS 270
66 3,702,696

CLASS 271
3 3,702,697
26 3,702,698

CLASS 273
1R 3,702,699
1.5R 3,702,700
73H 3,702,701
96D 3,702,702
148R 3,702,703

CLASS 277
134 3,702,704

CLASS 279
62 3,702,705

CLASS 280
150AB 3,702,706

CLASS 285
23 3,702,707
87 3,702,708

CLASS 287
81 3,702,709

CLASS 290
52 3,702,938

CLASS 292
235 3,702,710

CLASS 296
31P 3,702,711

CLASS 299
67 3,702,712

CLASS 303
21F 3,702,713
21P 3,702,714
30 3,702,715

CLASS 307
2 3,702,939
92 3,702,940
133 3,702,941
235R 3,702,942
235 3,702,943
246 3,702,944
251 3,702,945
297 3,702,946
303 3,702,947

CLASS 308
3A 3,702,716
3 6 3,702,717
72 3,702,718
160 3,702,719
236 3,702,720

CLASS 310
8.2 3,702,948

CLASS 315
5.38 3,702,951
22 3,702,949
31R 3,702,950

CLASS 317
62 3,702,952
101CP 3,702,953
234R 3,702,954
3,702,956
235R 3,702,955
246 3,702,957
253 3,702,958

CLASS 318
139 3,702,959
266 3,702,960

CLASS 321
2 3,702,961
3,702,963
14 3,702,962

CLASS 322
25 3,702,965
59 3,702,964

CLASS 324
133 3,702,966
158D 3,702,967

CLASS 325
315 3,702,968

CLASS 328
230 3,702,969

CLASS 330
2 3,702,970
57 3,702,971

CLASS 331
94 3,702,972
94.5PE 3,702,973
94.5H 3,702,975
94.5T 3,702,974
94.5 3,702,976
107R 3,702,977
113R 3,702,978

CLASS 333
81B 3,702,979

CLASS 335
16 3,702,980
133 3,702,981

CLASS 339
33 3,702,983
99R 3,702,982
349 3,702,682

CLASS 340
8R 3,702,984
166R 3,702,985
172.5 3,702,986
3,702,987
3,702,988
3,702,989
173R 3,702,990
174EB 3,702,995
174TF 3,702,991
3,702,992
3,702,994
174YC 3,702,993
174.1E 3,702,997
174.1H 3,702,996
258R 3,702,998
272 3,702,999
276 3,703,000
347AD 3,703,002
347NT 3,703,001

CLASS 343
7A 3,703,003
8 3,703,004
17.1 3,703,005

CLASS 350
150 3,702,722
160LC 3,702,723
160 3,702,724
162SF 3,702,725

CLASS 352
72 3,702,726
92 3,702,728
123 3,702,727
3,702,729
191 3,702,730

CLASS 353
19 3,702,721

CLASS 355
18 3,702,731
68 3,702,732
77 3,702,733

CLASS 356
38 3,702,734
96 3,702,736
106 3,702,735
109 3,702,737
3,702,737
3,702,738

CLASS 401
197 3,702,739

CLASS 408
56 3,702,740

CLASS 416
187 3,702,741

CLASS 417
12 3,702,744
25 3,702,742
53 3,702,743
68 3,702,745
481 3,702,746

CLASS 423
82 3,702,883
222 3,702,884
319 3,702,885
328 3,702,886
373 3,702,887
508 3,702,888
600 3,702,882
605 3,702,889

CLASS 424
220 3,702,890
274 3,702,891
308 3,702,892
346 3,702,893

CLASS 425
4 3,702,747
6 3,702,748
109 3,702,749
130 3,702,750
190 3,702,751

CLASS 444
1 3,703,006

CLASSIFICATION OF DESIGNS

D 2— 310 225,093
385 225,094
225,095
D 6— 85 225,096
164 225,138
185 225,097
D 8— 61 225,099
D 9— 18 225,100
175 225,101
235 225,098
D13— 1 225,102
225,103
225,104
D14— 24 225,105
225,106
D23— 36 225,107
D26— 1 225,108
225,110
6 225,109
13 225,111
14 225,112
225,113
D28— 1 225,114
D29— 19 225,115
20 225,116
D30— 1 225,121
D34— 5 225,117
225,118
225,123
11 225,119
15 225,120
225,122
D42— 8 225,124
D48— 23 225,125
D52— 6 225,126
D55— 1 225,127
225,128
D59— 10 225,129
D85— 7 225,130
D86— 10 225,131
225,132
11 225,133
D87— 5 225,134
D89— 1 225,135
D90— 20 225,136
D95— 3 225,137

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1
Alaska	2
American Samoa	3
Arizona	4
Arkansas	5
California	6
Canal Zone	7
Colorado	8
Connecticut	9
Delaware	10
District of Columbia	11
Florida	12
Georgia	13
Guam	14
Hawaii	15
Idaho	16
Illinois	17
Indiana	18
Iowa	19
Kansas	20
Kentucky	21
Louisiana	22
Maine	23
Maryland	24
Massachusetts	25
Michigan	26
Minnesota	27
Mississippi	28
Missouri	29
Montana	30
Nebraska	31
Nevada	32
New Hampshire	33
New Jersey	34
New Mexico	35
New York	36
North Carolina	37
North Dakota	38
Ohio	39
Oklahoma	40
Oregon	41
Pennsylvania	42
Puerto Rico	43
Rhode Island	44
South Carolina	45
South Dakota	46
Tennessee	47
Texas	48
Utah	49
Vermont	50
Virginia	51
Virgin Islands	52
Washington	53
West Virginia	54
Wisconsin	55
Wyoming	56
U.S. Air Force	57
U.S. Army	58
U.S. Navy	59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,702,575
3,702,933
4 : 3,702,594
3,702,741
3,702,744
3,702,787
3,702,982
6 : 3,702,486
3,702,501
3,702,515
3,702,532
3,702,549
3,702,553
3,702,560
3,702,596
3,702,611
3,702,616
3,702,619
3,702,623
3,702,628
3,702,642
3,702,657
3,702,662
3,702,674
3,702,678
3,702,700
3,702,703
3,702,707
3,702,709
3,702,710
3,702,714
3,702,723
3,702,725
3,702,733
3,702,738
3,702,747
3,702,755
3,702,757
3,702,762
3,702,763
3,702,806
3,702,814
3,702,821
3,702,841
3,702,853
3,702,854
3,702,855
3,702,856
3,702,859
3,702,869
3,702,870
3,702,876
3,702,904
3,702,910
3,702,913
3,702,915
3,702,917
3,702,920
3,702,937
3,702,945
3,702,955
3,702,967
3,702,974
3,702,979
3,702,996
3,702,997
3,702,998
3,703,001
3,703,005
3,703,006
8 : 3,702,523
9 : 3,702,524
3,702,550
3,702,659
3,702,668
3,702,681
3,702,730
3,702,797
3,702,849
3,702,867
3,702,871
3,702,889
3,702,976
3,702,989
3,703,000
10 : 3,702,534
3,702,658
3,702,760
3,702,773
11 : 3,702,932
12 : 3,702,514
3,702,571
3,702,597
3,702,665
3,702,666
3,702,699
3,702,846
3,702,898
3,702,925
3,702,940
3,702,941
17 : 3,702,491
3,702,492
3,702,512
3,702,565
3,702,566
3,702,578
3,702,587
3,702,591
3,702,617
3,702,627
3,702,636
3,702,639
3,702,669
3,702,680
3,702,715
3,702,717
3,702,736
3,702,771
3,702,803
3,702,847
3,702,872
3,702,901
3,702,906
3,702,921
3,702,958
3,702,966
3,702,983
18 : 3,702,498
3,702,746
19 : 3,702,789
3,702,843
20 : 3,702,495
3,702,759
3,702,863
3,702,890
22 : 3,702,664
3,702,753
3,702,754
3,702,816
3,702,819
3,702,857
23 : 3,702,779
24 : 3,702,656
3,702,775
3,702,795
3,702,800
3,702,801
3,702,808
3,702,882
3,702,886
25 : 3,702,493
3,702,497
3,702,503
3,702,546
3,702,580
3,702,612
3,702,613
3,702,719
3,702,731
3,702,732
3,702,793
3,702,829
3,702,888
3,702,923
3,702,972
3,702,973
3,703,003
26 : 3,702,490
3,702,494
3,702,496
3,702,510
3,702,519
3,702,535
3,702,567
3,702,598
3,702,653
3,702,676
3,702,706
3,702,708
3,702,718
3,702,783
3,702,794
3,702,809
3,702,823
3,702,835
3,702,848
3,702,860
3,702,899
27 : 3,702,488
3,702,502
3,702,543
3,702,593
3,702,633
3,702,638
3,702,686
3,702,788
3,702,844
28 : 3,702,608
3,702,842
29 : 3,702,521
3,702,570
3,702,592
3,702,861
31 : 3,702,583
34 : 3,702,511
3,702,516
3,702,531
3,702,569
3,702,584
3,702,604
3,702,605
3,702,675
3,702,687
3,702,701
3,702,704
3,702,711
3,702,722
3,702,749
3,702,772
3,702,786
3,702,796
3,702,818
3,702,826
3,702,852
3,702,877
3,702,885
3,702,905
3,702,943
3,702,971
3,702,975
3,702,990
3,702,994
3,702,995
35 : 3,702,589
3,702,620
3,702,724
36 : 3,702,484
3,702,485
3,702,487
3,702,509
3,702,547
3,702,558
3,702,561
3,702,568
3,702,579
3,702,614
3,702,625
3,702,670
3,702,671
3,702,765
3,702,766
3,702,768
3,702,776
3,702,820
3,702,824
3,702,838
3,702,865
3,702,873
3,702,874
3,702,930
3,702,948
3,702,963
3,702,964
3,702,965
3,703,004
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DESIGN PATENTS

1 225,119
6 225,096
225,112
225,116
225,121
225,126
225,128
8 225,120
9 : 225,110
17 : 225,098
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225,133
18 : 225,107
24 : 225,138
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26 : 225,114
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225,135
27 : 225,097
225,106
225,127
31 : 225,118
34 : 225,094
225,095
225,113
225,131
225,132
36 : 225,115
225,122
225,130
225,134
37 : 225,125
39 : 225,103
225,104
225,136
42 : 225,129
48 : 225,102

U.S. GOVERNMENT PRINTING OFFICE: O——1972

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE
November 21, 1972 Volume 904 Number 3

CONTENTS

Page

Patent Suits

Certificates of Correction for the Week of November 21, 1972 272
Adverse Decisions in Interferences 272
Condition of Patent Applications 273
Defensive Publications 274

Patents Granted

General and Mechanical 279
Chemical 365
Electrical 412
Design Patents Granted 445
Index of Patentees . . . . PI 1
Indices of Applicants of Defensive Publications and Designs . . . . PI 23

Classification of

Patents . . . . PI 25
Designs and Defensive Publications . . . . PI 27

Geographical Index of Residence of Inventors

Patents . . . . PI 28
Designs and Applicants of Defensive Publications . . . . PI 29

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PATENT OFFICE NOTICES

Certificates of Correction for the Week of Nov. 21, 1972

D. 223,179
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3,609,079
3,609,379
3,612,621
3,614,707
3,615,353
3,615,378
3,616,122
3,616,801
3,621,406
3,622,879
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3,624,500
3,625,636
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3,627,772
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Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents, final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,233,950, Max Baermann, PERMANENT MAGNETIC BEARING, decided Mar. 15, 1972, Interference No. 96,739, claims 1, 2, and 5.

Patent No. 3,321,925, Clarence W. Shaw, DEEP WATER LAY BARGE AND METHOD, decided June 26, 1972, Interference No. 96,691, claim 1.

Patent No. 3,434,073, John F. Forkner, RAPID ACTING LASER Q-SWITCH, decided June 9, 1972, Interference No. 97,162, claims 1 and 2.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF OCTOBER 31, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries, Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	8-19-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-07-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-09-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	8-09-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—Director (Vacant) Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	5-04-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	3-08-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	10-11-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-01-71
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—Director (Vacant) Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-16-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-09-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director Industrial Arts: Household, Personal and Fine Arts.	3-30-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-01-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	8-02-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	9-23-71
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	12-06-71
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-15-71

Expiration of patents: The patents within the range of numbers indicated below expire during November 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,721,999 to 2,725,557, inclusive
Plant Patents	Numbers 1,427 to 1,435, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED NOVEMBER 21, 1972

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16. 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T904,018
COATING COMPOSITIONS

Keith W. Kroon and George P. Kasper, both % Eastman Kodak Co., Kodak Park Division, Rochester, N.Y. 14650

Filed Mar. 4, 1971, Ser. No. 121,119
Int. Cl. H01j *1/62*
U.S. Cl. 250—80
No Drawing. 16 Pages Specification

Coating compositions comprising nearly equal parts, by weight, of a mixture of (1) a polymethylmethacrylate with (2) a copolymer of ethylacrylate, acrylic acid and acrylonitrile are disclosed. When used in radiographic elements like phosphorescent screens they exhibit high flexibility and provide good protection as a clear, bubble free layer when coated from an aqueous dispersion or latex containing from about 5 percent to about 40 percent by weight of said mixed polymers.

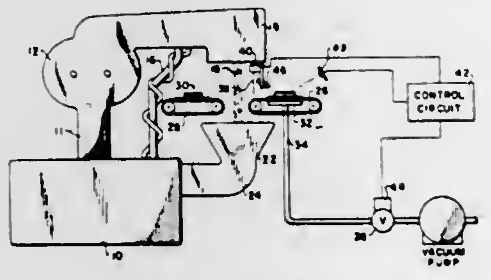
The phosphorescent screens protected with these overcoats can be used in combination with light sensitive radiographic elements which in turn exhibit improved optical and physical characteristics.

Silver halide emulsions and elements useful in integral or non-integral combination with the above-screens can be chemically sensitized, e.g. with noble metal sensitizers alone or in combination with sulfur or selenium sensitizers. They can contain spectral sensitizers, incorporated color-forming couplers, incorporated developing agents, antifoggants, hardeners, plasticizers, coating aids, vinyl polymers, and other suitable photographic addenda such as described in U.S. Pat. 3,297,446 of Dunn issued Jan. 10, 1967 (columns 4 to 9).

T904,019
METHOD AND APPARATUS FOR CONTROLLING DRAW DOWN OF PLASTIC COATING PROCESS

James E. Huffaker and Carl L. Terrell, both of P.O. Box 511, Kingsport, Tenn. 37662

Continuation of abandoned application Ser. No. 787,414, Dec. 27, 1968. This application Apr. 19, 1971, Ser. No. 135,508
Int. Cl. B29c *19/02;* **C23c** *13/08;* **G01n** *2/26*
U.S. Cl. 156—272
3 Sheets Drawing. 14 Pages Specification

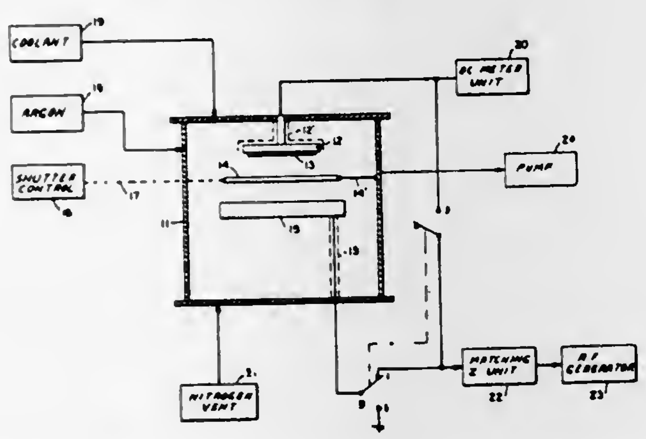


The drawdown of a plastic coating onto a substrate such as in a skin package is controlled by arranging a source of radiations and a radiation sensitive means so that when the coating is in contact with the substrate the radiations from the source will be reflected from the coating into the radiation sensitive device causing drawdown to be terminated. Thus, the amount of drawdown of a plastic coating onto a substrate and around an article is controlled. The preferred apparatus for accomplishing the control includes a solid-state, light sensitive means in circuit with a semi-conductor which controls the actuation of a relay regulating the operation of a pressure differential creating device.

T904,020
RAZOR BLADE COATING

George C. Lane, Danbury, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed May 18, 1971, Ser. No. 144,506
Int. Cl. C23c *15/00*
U.S. Cl. 204—192
1 Sheet Drawing. 18 Pages Specification



The specification is directed to pseudomorphologically depositing a material on the cutting edge of a razor blade. A specific embodiment provides for sputtering chromium on the blade edge and thereafter sputtering boron nitride on the chromium coating. The sputtered boron nitride pseudomorphologically replicates the body centered cubic form of the chromium on the blade edge.

T904,021
PREPARATION OF DIOLS FROM UNSATURATED ALCOHOLS

Harry B. Copelin, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 26, 1971, Ser. No. 166,315
Int. Cl. C07c *31/18, 47/18*
U.S. Cl. 260—635 A
No Drawing. 9 Pages Specification

The invention relates to a process for the production of diols by the hydroformylation of unsaturated alcohols and hydrogenation of the hydroformylated product in an aqueous media. The process requires the use of phosphine complexes of rhodium to produce the desired high yields of diols. Most of the diols so produced are valuable components in the production of polyethers and polyesters.

T904,022
METHOD OF INCREASING THE SHARPNESS OF PHOTOGRAPHIC IMAGES

Richard K. Kurz, Kodak Park, Rochester, N.Y. 14650, and David V. Young, 2344 Nebraska Ave. NW., Washington, D.C. 20016

Filed Sept. 22, 1971, Ser. No. 182,881
Int. Cl. G03c *1/34*
U.S. Cl. 96—109
No Drawing. 12 Pages Specification

Photographic images of improved sharpness are obtained by incorporating physical development inhibitors, e.g. mercaptotetrazoles such as phenyl mercaptotetrazole, etc. thiazoles such as mercaptothiazoles, amino mercaptothiazoles, etc., triazoles such as mercaptotriazoles, etc., in a silver halide emulsion and developing the exposed emulsion in a developing composition containing a high concentration of silver solvents, e.g. thiocyanates such as sodium thiocyanate, thiosulfates such as sodium thiosulfate, etc. The improvement in image sharpness is a result of both Edge and Eberhard effects.

T904,023
DIRECT ADDITION OF MAGNESIUM-METAL TO A TURBINE ENGINE COMBUSTION CHAMBER

James A. Kelly and George B. Cobel, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 27, 1971, Ser. No. 193,107
Int. Cl. F02c *3/20, 7/30*
U.S. Cl. 60—39.02
No Drawing. 5 Pages Specification

A method to reduce or prevent the detrimental, corrosive effects attributable to gas turbine engine combustion products containing vanadium compounds. A magnesium alloy containing greater than about 80 weight percent and preferably greater than about 95 weight percent magnesium is introduced into the combustion chamber of a gas turbine engine. For optimum results, the alloy desirably is substantially free of vanadium. The metal can be in any solid form such as powder, chip, rod or wire; however, magnesium wire or rod is preferred.

The metal is fed into the combustion chamber substantially simultaneously with the turbine fuel. Generally, and preferably, the metal and fuel are fed through separate ports in the combustion chamber, but both the fuel and metal can be confluently passed into the combustion chamber at a regulated desired rate. A regulatable feed means, such as commonly used for wire in commercial welding apparatus, can be employed to insert the corrosion product inhibiting magnesium alloy into the turbine combustion chamber. The magnesium then combines with the fuel and combustion products to reduce or prevent the detrimental effects of the vanadium compounds.

T904,024
CHEMICALLY CROSS-LINKED POLYETHYLENE STABILIZED WITH SULFUR CONTAINING ALKYLESTERS OF HINDERED HYDROXYPHENYLALKANOIC ACIDS

Peter Klemchuk, Yorktown Heights, N.Y., assignor to Ciba-Geigy Corporation, Greenburgh, N.Y.

Filed Jan. 3, 1972, Ser. No. 215,113
Int. Cl. C08f *45/58;* **C08g** *51/58*
U.S. Cl. 260—45.85 B
No Drawing. 18 Pages Specification

Cross-linked polyethylene can be successfully stabilized without interfering with the cross-linking step during processing, by incorporating therein a sulfur containing alkylester of a hindered hydroxyphenylalkanoic acid, said ester being derived from a 2:1 mol ratio of said acid with a thio bis (alkanol).

These additives may be used alone or in combination with dialkylester sulfide such as distearylthiodipropionate and dilaurylthiodipropionate. Other additives, such as metal deactivators, pigments, carbon black and the like may also be present. Chemically cross-linked polyethylene is particularly useful as an insulation for high voltage power cables.

T904,025
ANTISOILING ALUMINA COATINGS FOR POROUS SURFACES

Leonard J. Schuman, Parsippany, and Raymond T. Ertle, Pompton Plains, N.J., assignors to Continental Oil Company, Ponca City, Okla.

Filed Jan. 7, 1972, Ser. No. 216,267
Int. Cl. B32b *27/06;* **B44d** *5/00*
U.S. Cl. 117—138.8 UA
No Drawing. 5 Pages Specification

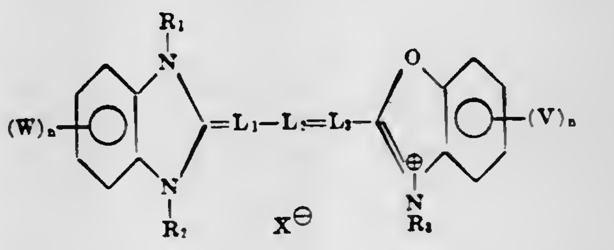
A method for applying an antisoiling alumina coating to porous surfaces by applying a mixture containing from about 6 to about 9 weight percent dispersible alumina; from about 0.6 to about 1.0 weight percent acid selected from monofunctional organic acids containing from 1 to about 4 carbon atoms, halogenated monofunctional organic acids containing from about 2 to about 4 carbon atoms and mineral acids; about 18 to about 25 weight percent non-dispersible alumina and about 75.4 to about 65 weight percent water to provide an antisoiling coating. A preferred acid is monochloroacetic acid and a preferred mixture contains from about 7 to 8 weight percent dispersible alumina, about 0.7 to about 0.9 weight percent monochloroacetic acid, about 20 to about 23 weight percent non-dispersible alumina and about 72.2 to about 69 weight percent water. In an example a mixture of 7.7 weight percent "Dispal" dispersible alumina, 0.7 weight percent monochloroacetic acid, 23.0 weight percent "Conopal" non-dispersible alumina and 68.6 weight percent water was used to apply an alumina coating to acrylic foam-backed material.

T904,026
SENSITIZING DYE COMBINATIONS CONTAINING BENZIMIDAZOLOBENZOXAZOLOCARBOCYANINE DYES

Mary Jane W. Brizee, Pittsford, N.Y. (Kodak Park, Rochester, N.Y. 14650)

Filed Jan. 24, 1972, Ser. No. 220,417
Int. Cl. G03c *1/18*
U.S. Cl. 96—124
No Drawing. 37 Pages Specification

Photographic silver halide emulsions are spectrally sensitized with a dye combination comprising (1) a benzimidazolobenzoxazolcarbocyanine dye, and (2) a sensitizing dye selected from the group consisting of (a) a hemicyanine dye, (b) a merocyanine dye, (c) a complex cyanine dye containing a 5-membered ketomethylene heterocyclic nucleus containing nitrogen as the first heteroatom and nitrogen or sulfur as the second heteroatom, (d) a dicarbocyanine dye, (e) a tricarbocyanine dye, (f) a hemioxonol dye, and (g) a complex merocyanine dye. In preferred dye combinations the benzimidazolobenzoxazolocarbocyanine dye has the following formula:



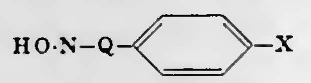
wherein each *n* represents 1 or 2; R_1 represents an unsubstituted lower alkyl group; R_2 and R_3 each represents an alkyl group, an alkenyl group or an aryl group; X represents an acid anion; W represents halogen, an alkylcarbamoyl group, an acyl group, an aryl group, an alkyl group, an alkoxy group, cyano, a haloalkyl group or a haloalkylsulfonyl group; and V represents an alkoxy group, an alkyl group or an aryl group, L_1, L_2, and L_3 represent a methine linkage. Typical highly useful emulsions comprise silver bromoiodide emulsions containing a combination of a benzimidazolobenzoxazolocarbocyanine dye such as anhydro-1-allyl-5-chloro-3′-ethyl-5′-methoxy-3-(3 - sulfopropyl)-benzimidazoloxacarbocyanine hydroxide or anhydro-5,6-dichloro-1,3′-diethyl-5′-methoxy - 3 - (3-sulfopropyl)benzimidazoloxacarbocyanine hydroxide, and one of the dyes (a) through (g) above.

T904,027
AROMATIC POLYMERS

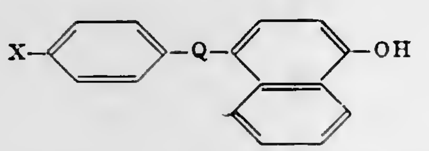
Terence Edwin Attwood, Kimpton, John Brewster Rose, Letchworth, and Alan Francis Lennox, Welwyn Garden City, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 1, 1972, Ser. No. 222,698
Claims priority, application Great Britain, Feb. 4, 1971, 3,937/71
Int. Cl. C08g *23/00, 23/16*
U.S. Cl. 260—49
No Drawing. 8 Pages Specification

Aromatic polymers containing repeating units of monomers of naphthalene residues of the type:



where N is a naphthalene group linked to the monomer chain in two ring positions, X is halogen, preferably fluorine or chlorine, and Q is —SO_2— or —CO— and novel halophenyls of the formula:



where X and Q are defined as above, are polymerized. The above monomers may be polymerized separately or copolymerized together, particularly when Q is —SO_2—, to form useful thermoplastic objects including moldings, fibers and films as well as surface coatings and adhesives. Polymerization is preferably accomplished using at least one of the above halophenyl compounds in the form of an alkali metal salt or by reaction of the halophenol compound in the presence of an alkali metal fluoride.

T904,028
SELF-HEATING DIFFUSION TRANSFER FILM UNIT

Frederick E. Ford and Hugh S. A. Gilmour, both of Kodak Park Works, Rochester, N.Y. 14650

Filed Feb. 4, 1972, Ser. No. 223,774
Int. Cl. G03c *1/48*
U.S. Cl. 96—76
No Drawing. 11 Pages Specification

A self-heating photographic film unit useful in black-and-white or color transfer processes comprises:

(a) a photographic element comprising a support having thereon at least one silver halide emulsion layer,
(b) an image-receiving layer, and
(c) means for discharging an alkaline processing composition within the film unit, such as a rupturable container, the film unit containing a silver halide developing agent and a heat-generating means for raising the temperature of the film unit during processing from about 10–30° F. over the ambient atmospheric temperature.

Heat-generating means disclosed include acid-base and oxidation-reduction materials which produce heat upon reaction. Specific acidic materials disclosed include polymeric acids such as a copolymer of maleic anhydride and methyl vinyl ether. Specific alkaline materials disclosed include sodium and potassium hydroxide. Oxidation-reduction materials disclosed include thioureahydrogen peroxide. One component of the exothermic pair can be incorporated in the processing composition while the other is incorporated in the photosensitive element or image-receiving layer. The heat-generating materials may also be incorporated in two rupturable containers or one container with two compartments. Since the heat-generating means is in the photographic film unit itself, it is generally more efficient than supplying heat to the film unit by external means.

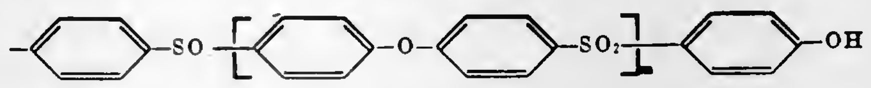
T904,029
COPOLYMERS

Stuart Gaskin, Hatfield, and Eric Nield, Watton-on-Stone, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 22, 1972, Ser. No. 228,261
Claims priority, application Great Britain, Mar. 4, 1971, 6,027/71
Int. Cl. C08g *41/04*
U.S. Cl. 260—857 TW
No Drawing. 38 Pages Specification

Block copolymers having from 1 to 99% of units of a high modulus aromatic polymer such as aromatic polyamides and aromatic polyesters and 99 to 1% of units derived from a thermoplastic condensation polymer compatible with the block copolymer and having a group capable of condensation with a monomer of the high modulus polymer are disclosed. Suitable high modulus polymers may be obtained by polymerizing an amino or hydroxy-carboxylic acid or polymerizing substantially equimolar proportions of an aromatic diamine or diol with an aromatic dicarboxylic acid. Preferably the high modulus polymer contains units derived from 1,4-diaminobenzene or terephthalic acid. Thermoplastic condensation polymers of the type described include polysulphones, polyketones, aliphatic polyamides for example nylons, polyesters for example polyethylene terephthalate, polyolefins and aromatic polycarbonates, provided that the polymer is thermoplastic. Copolymers of the present invention exhibit increased modulus and impact strength by providing a block copolymer having units of a reinforcing material, an aromatic polyamide or aromatic polyester, and units of the thermoplastic condensation polymer to be reinforced. The copolymers are useful for forming filaments and shaped articles.

Also disclosed are methods to produce the block copolymers as characterized above and include reaction of the aromatic polyamide or polyester with the thermoplastic condensation polymer in the presence of a solvent and an acid acceptor. Another method disclosed reacts a polyamide, polysulphone or lactam with an aromatic sulphone in the presence of an alkaline catalyst. Illustrative of the method is the reaction of caprolactam with an aromatic polysulphone in the presence of sodium hydride to produce a chain of caprolactam units and pendant branches grafted thereto comprising units of the formula

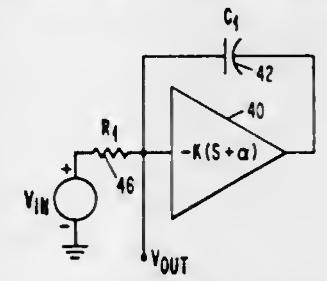


m being approximately 1 to 5.

T904,030
UNIQUE CLASS OF TWO-POLE ACTIVE FILTERS

Neil R. Davie, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 27, 1972, Ser. No. 238,309
Int. Cl. H03h *7/10*
U.S. Cl. 307—295
2 Sheets Drawing. 13 Pages Specification



A new class of two-pole active low-pass filters is disclosed herein. The frequency dependent amplifier in the filter has a transfer characteristic in the frequency domain which takes the form $-K(s+\alpha)$. When this frequency dependent amplifier is used with capacitive feedback, the transfer function of the total filter is given by the expression

$$T(s)=\frac{1}{s^2+\frac{K\alpha+1}{K}\,s+\frac{1}{KR_1C_1}}$$

In this expression, R_1 is the resistance **46** in the input leg to the filter and C_1 is the feedback capacitance **42** around the frequency dependent amplifier **40**. The values of K and α will vary depending upon the configuration of the frequency dependent amplifier **40** and the choice of components.

One of the simplest and most effective implementations of the frequency dependent amplifier **40** is the use of a single transistor **52** with a parallel RC network R_3C_3 connected to the emitter, a load resistor R_2 connected to the collector, and the input node of the amplifier connected to the base. The capacitive feedback is connected between the collector and base of the transistor. Other possible implementations include frequency dependent amplifiers which have internal feedback loops. The reactive elements used to obtain the frequency dependent characteristic for the amplifier may be placed either in the internal feedback loop of the amplifier or external to the internal feedback loop of the amplifier.

T904,031
AMMONIUM POLYPHOSPHATES

John F. McCullough, 105 Terrace, Florence, Ala. 35630, and Richard C. Sheridan, 2909 Alexander, Sheffield, Ala. 35660

Filed Mar. 27, 1972, Ser. No. 238,604
Int. Cl. C01b *15/16, 25/26*
U.S. Cl. 423—305
No Drawing. 19 Pages Specification

A method for producing long-chain crystalline ammonium polyphosphates with the general formula

$$(NH_4)_mH_{(n-m)+2}P_nO_{3n+1}$$

where n is greater than about 50 and where the ratio m/n is in the range 1.04 to about 0.85 by thermal condensation of ammonium ortho-, pyro-, tripoly-, tetrameta-, or oligophosphates by heating in a stream of ammonia at temperatures of about 200° C. to about 400° C. for a period of about 1 to 16 hours.

Any of three crystalline modifications were prepared by suitable control of the operating conditions. Both ammoniated wet-process and furnace-grade phosphoric acid were used as feed materials, and the products were high-analysis fertilizers with N-P_2O_5-K_2O grades ranging from 13–67–0 to 14–73–0.

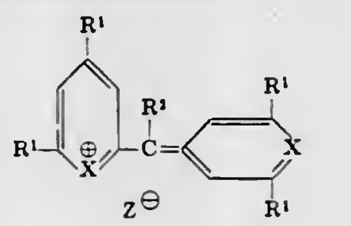
T904,032
SENSITIZING DYES FOR ELECTROPHOTOGRAPHIC COMPOSITION AND ELEMENT

George A. Reynolds and James A. Van Allan, both % Eastman Kodak Co., Kodak Park Division, 1999 Lake Ave., and Lawrence E. Contois, % Eastman Kodak Co., Kodak Park Division, 1669 Lake Ave., all of Rochester, N.Y. 14650

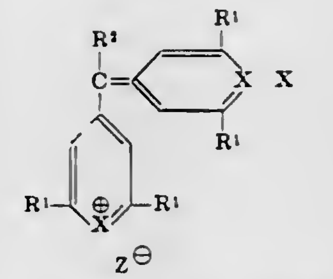
Filed Mar. 17, 1972, Ser. No. 235,845
Int. Cl. G03g *5/06*
U.S. Cl. 96—1.6
No Drawing. 24 Pages Specification

This invention relates to organic compounds useful as sensitizers for organic photoconductive compositions having one of the following formulas:

I.



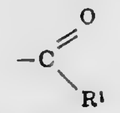
II.



wherein:

R^1 represents a hydrogen atom, an alkyl radical having 1 to about 15 carbon atoms, a substituted alkyl radical wherein the alkyl moiety contains from 1 to about 15 carbon atoms and wherein the substituents are phenyl radicals or alkoxy radicals containing 1 to about 4 carbon atoms, a phenyl radical, and a substituted phenyl radical having as substituents alkyl radicals having 1 to about 15 carbon atoms or alkoxy radicals having 1 to about 4 carbon atoms;

R^2 represents R^1 and a radical having the following formula:



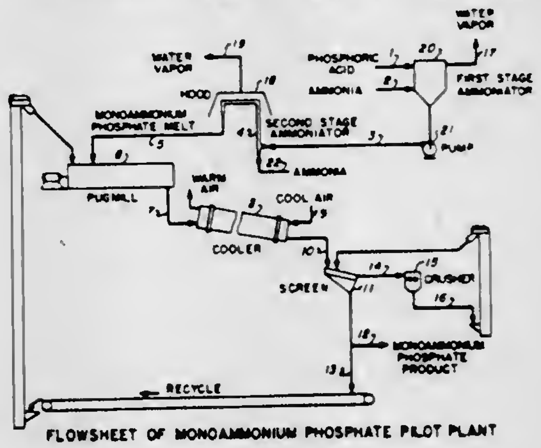
X represents a hetero atom selected from the group consisting of an oxygen and a sulfur atom; and

$Z^\ominus$ is an anionic function.

T904,033
MONOAMMONIUM PHOSPHATE PRODUCTION

Robert G. Lee, Lakeside Acres, Florence, Ala. 35630, and Melvin M. Norton, Rte. 1, Virginia Shores, Sheffield, Ala. 35660

Filed May 26, 1972, Ser. No. 257,153
Int. Cl. C05b *7/00*
U.S. Cl. 71—34
1 Sheet Drawing. 11 Pages Specification



FLOWSHEET OF MONOAMMONIUM PHOSPHATE PILOT PLANT

Process for the production of monoammonium phosphate in finely divided granular form containing up to 30 percent of its P_2O_5 as polyphosphate. Orthophosphoric acid typically containing 54 percent P_2O_5 is ammoniated in two stages utilizing heat from the reaction to evaporate water and produce essentially anhydrous, molten monoammonium phosphate. The specific procedure followed is a spin-off of Getsinger's teachings in U.S. Pat. 3,382,059. Gaseous ammonia is fed to the first stage at a rate to give 2–6 percent by weight nitrogen in the acid, resulting in temperatures of 220–285° F. and evaporation of up to half of the free water from the acid. The remainder of the ammonia is added to the second stage, consisting of a pipe reactor with length to diameter ratio in the range from 11:1 to 74:1, to increase the

$$NH_3:H_3PO_4$$

mole ratio to 0.9–1.1 and to increase the temperature to 350–440° F., thereby evaporating all the remaining free water and possibly some of the chemically combined water from the orthophosphate. The melt is cooled and solidified by mixing with recycled product, typically in a pugmill, at a ratio of recycle to melt of 3 to 1. The product is useful as an intermediate in the production of granular or fluid mixed fertilizers.

T904,034
PHOTOGRAPHIC EMULSIONS

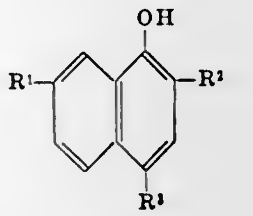
Derek David Chapman, % Eastman Kodak Co., Kodak Park Division, 1999 Lake Ave., Rochester, N.Y. 14650
Filed June 26, 1972, Ser. No. 266,190
Int. Cl. G03c *1/16, 1/36*
U.S. Cl. 96—100
No Drawing. 33 Pages Specification

Silver halide emulsions are provided, which feature certain cyanine and merocyanine dyes containing a 3 or 5 position pyrazole nucleus. The dyes are outstanding electron acceptors and spectral sensitizers in direct positive type photographic silver halide emulsions. They provide superior reversal systems, especially with fogged silver halide emulsions that are characterized by good speed with maximum sensitivity occurring in the region of from about 440 to 580 nm.

T904,035
NOVEL CYAN-DYE-FORMING COUPLER

Samuel J. Ciurca, Jr., Kodak Park, Rochester, N.Y. 14650
Filed June 27, 1972, Ser. No. 266,766
Int. Cl. G03c *1/40*
U.S. Cl. 96—100
No Drawing. 33 Pages Specification

Cyan-dye-forming α-naphtholic couplers and intermediate compounds having an alkyl ballasting group of 12 or more carbon atoms substituted on the No. 7 ring position of the B ring as in the formula



wherein

R^1 is an alkyl group;

R^2 is a hydrogen atom, an amino group, an alkyl carbamyl group, an arylcarbamyl group, or a carbamyl group;

R^3 is a hydrogen atom, an amino group, or a coupling off group including an aryl azo and a sulfonamido group; also elements and emulsions containing one or more of the above defined couplers and a method for improving color photographic images by utilizing said couplers.

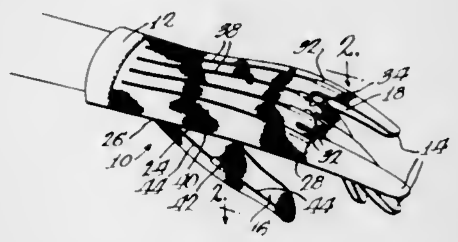
PATENTS

GRANTED NOVEMBER 21, 1972

GENERAL AND MECHANICAL

3,703,007
FINGER RING DISPLAY GLOVE

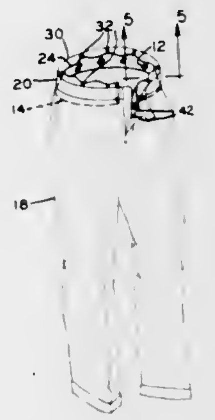
Gloria Stewart, 1140 Central, Downers Grove, Ill.
Filed March 15, 1971, Ser. No. 124,118
Int. Cl. A41d *19/00*
U.S. Cl. 2—163 **2 Claims**



The back of the glove is made in part of an elasticized material or stretch type knitted material which extends forwardly from above the narrowest portion of the glove and comprises the backs of the finger portions beyond the knuckle to the first joint to facilitate donning the glove. The thumb stall may also be made of the same material. At least one of the finger backs, usually the ring finger, and/or the thumb stall is slit to permit a large stone or decoration of a ring worn on the finger or thumb to project outwardly of the glove so as to be seen. When no ring or one without a projecting stone is worn the slit is closed by overlapping pieces of material which adheres to itself. These pieces are secured to the inner faces of the elasticized or similar material of the glove and finger portions.

3,703,008
WAISTBAND CONSTRUCTION

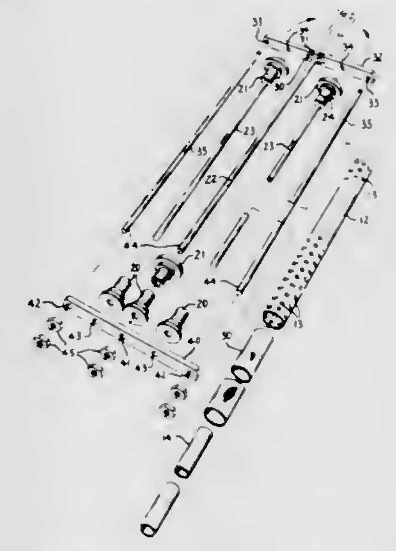
Arthur Franklin Hudson, P.O. Box 1025, Huntington, Ind.
Filed Dec. 30, 1970, Ser. No. 102,702
Int. Cl. A41d *1/06*
U.S. Cl. 2—237 **9 Claims**



A frusto-conically shaped panel of elastomeric two-way stretch material is secured at the lower edge within the interior of a pair of trousers along the waistline and the upper edge of the band is supported by collapsible panels. When the trousers are worn, the waistband is stretched to conform with the waistline of the wearer, and the stretched waistband provides a reinforcement to the upper edge of the trousers, preventing them from turning over or deforming under use.

3,703,009
CLOTH REINFORCING MEMBER FOR USE IN MAKING TISSUE GRAFTS

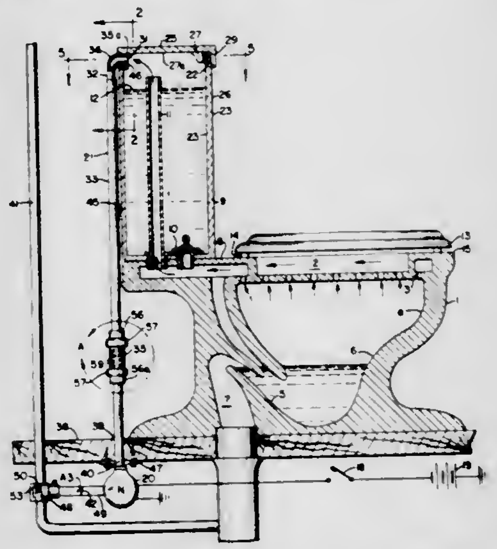
Charles H. Sparks, 3725 S.E. Martins Street, Portland, Oreg.
Division of Ser. No. 823,287, May 9, 1969, Pat. No. 3,625,198, which is a continuation-in-part of Ser. No. 655,838, July 25, 1967, Pat. No. 3,514,791. This application Sept. 7, 1971, Ser. No. 178,171
Int. Cl. A61f *1/24;* **A61b** *19/00*
U.S. Cl. 3—1 **2 Claims**



Method and apparatus for growing a graft structure, particularly in a patient's own body. A die cluster is disclosed comprising a plurality of dies for growing graft tubes whereby such graft tubes may be connected together end to end to make a tube of desired length. The invention further includes an improved method for implanting the die cluster in the body, an improved cloth reinforcing member for tissue grafts and method of preparing same.

3,703,010
VENTILATED TOILET

Dale F. Russell, 6195 Rochester Road, Troy, Mich.
Filed May 12, 1970, Ser. No. 36,563
Int. Cl. E03d *9/05*
U.S. Cl. 4—216 **4 Claims**



My invention comprises an improved ventilator means for a toilet. The ventilator means includes a suction means having a regulating valve to reduce suction in the toilet flush tank when the toilet is flushed.

3,703,011

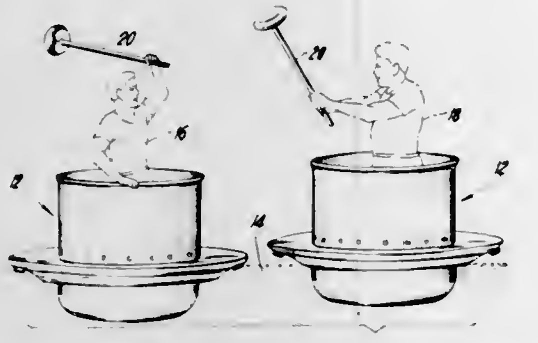
AQUATIC GAME AND EQUIPMENT THEREFOR

Charles P. Goggi, 140 Cebra Avenue, Stapleton, and Eugene S. Goggi, 5 Liberty Avenue, Dongan Hills, both of N.Y.

Filed Dec. 7, 1970, Ser. No. 95,509

Int. Cl. B63c ; B63b *35/00*

U.S. Cl. 9—1 A **12 Claims**



Aquatic game equipment is disclosed comprising a vessel having a collar of buoyant material and a plurality of holes disposed in a circumferential row in the vessel above the buoyant collar. A weight in the bottom of the vessel is provided to maintain the equipment in an upright position when placed in the water. According to a preferred form of aquatic game, a plurality of vessels according to the present invention are placed in the water and individuals kneeling or standing in the vessels attempt to force an opponent through the use of jousting sticks to tip his vessel sufficiently to cause it to ship water through the holes above the collar, thereby to sink the opponent's vessel and win the game.

3,703,012

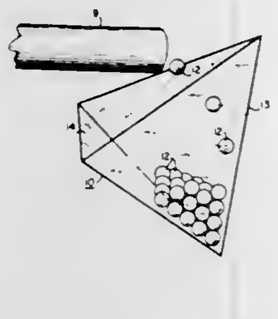
CLOSE PACKING OF UNIFORM SIZE SPHERES

Phillip W. Mast, Raleigh, N.C., and Laurent A. Beaubien, Arlington, Va., assignors to The United States of America as represented by the Secretary of the Navy

Filed Dec. 12, 1969, Ser. No. 884,526

Int. Cl. B63b *21/00*

U.S. Cl. 9—8 **3 Claims**



A method for attaining ultimate effeciency in the packing of uniform-sized spheres; which may be used to improve the buoyancy of flotation systems utilizing small hollow spheres.

3,703,013

BINDER FOR WATER SKIS

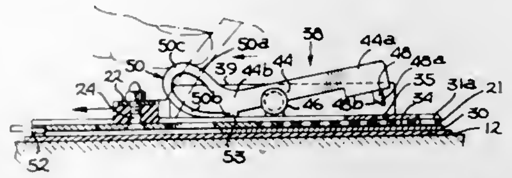
George J. Leach, San Diego, Calif., assignor to Chartered Enterprises, San Fernando, Calif.

Filed Aug. 3, 1970, Ser. No. 60,692

Int. Cl. A63c *15/06*

U.S. Cl. 9—310 AA **4 Claims**

A binder for water skis having a rigid foot piece and a heel piece attached to a mounting plate for movement relative to the foot piece. Guides are located at opposite sides of the heel piece and have tracks for receiving the edges of the mounting plate. A latch means is provided to normally hold the heel piece from movement away from the foot piece while permitting movement of the heel piece towards the foot piece. The latch means comprises a pivotally mounted arm having a tapered latch pin normally located in a hole in one of the guide means and in one of a plurality of adjacent holes along a side edge of the mounting plate of the heel piece. The taper on the pin permits the latch pin to ratchet and allow the heel piece to move towards the foot piece.



3,703,014

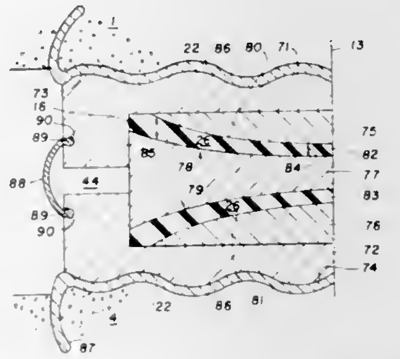
TILTABLE BEARING MEANS, ESPECIALLY FOR BRIDGES

Waldemar Koester, Forsbach, Germany, assignor to Firma Kober AG, Glarus, Switzerland

Filed Feb. 2, 1971, Ser. No. 111,854

Int. Cl. E01d *19/06*

U.S. Cl. 14—16 **22 Claims**



This invention relates to bearing means, especially for heavy loads such as bridges. A piston means on which the load bears is held in a cylinder which is also filled with pressure material. The surface of the piston which faces the pressure material has such a shape that the piston height, relative to a central axis, increases from said axis toward the periphery of the piston whereby such pressure material facing surface of the piston may, for example, have a concave shape, a stair-step shape, a hollow cone shape, or any other shape providing the smallest piston height at the location of said axis and a larger piston height at the piston periphery.

3,703,015

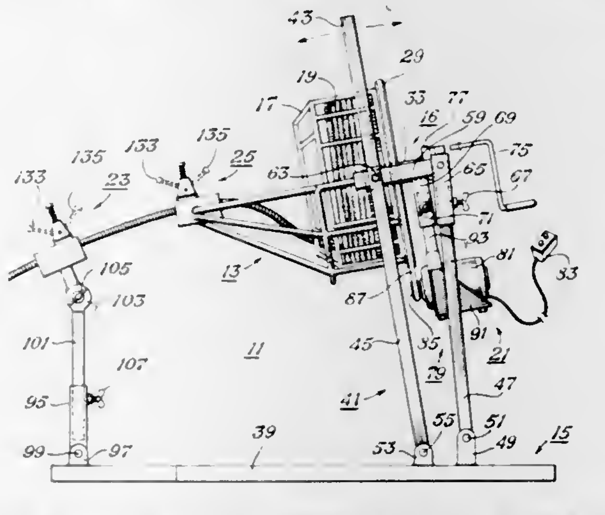
CONDUIT CLEANING APPARATUS

Lester H. Naeve, 3504 Parker Road, Fort Worth, Tex.

Filed Aug. 25, 1971, Ser. No. 174,812

Int. Cl. B08b *9/02*

U.S. Cl. 15—104.3 SN **11 Claims**



Conduit cleaning apparatus characterized by a cage containing a demountable reel of cable; a support frame comprising a base member; a support means carried by the base member for effecting reciprocal movement of the cage; first and second ratchet gripping means for either advancing the cable from the reel into the conduit to be cleaned or from the conduit and into the reel when the cage is moved reciprocally via the support means. The cage may be rotated by either manual or power drive means. The apparatus is designed to be broken down into four subassemblies so that one worker may easily transport, assemble, use and disassemble the apparatus without requiring a helper. Also disclosed are specific structural features that are employed in preferred embodiments.

3,703,016

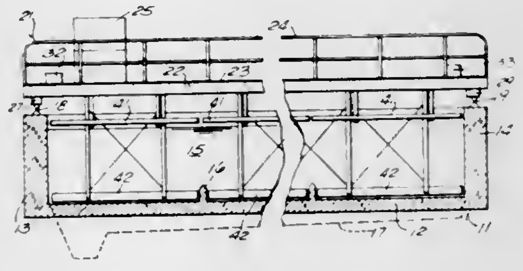
TRAVERSING BRIDGE FRICTION DRIVE ALIGNMENT CONTROL

Lester H. Schramm; John B. Rank, both of Milwaukee, and Melvin R. Salkeld, Brookfield, all of Wis., assignors to Rex Chainbelt Inc., Milwaukee, Wis.

Filed Oct. 19, 1970, Ser. No. 81,718

Int. Cl. B61d *15/00;* **B66c** *17/26;* **F22b** *37/48*

U.S. Cl. 15—246.5 **7 Claims**



Four wheels support a travelling bridge on parallel rails. One wheel at each end is driven by a motor and the power supply driving each motor is separately adjustable. The other two wheels are cylindrical and of the same nominal size and are journalled so that they roll freely in supporting the bridge on the rails.

Relative rotation of the two cylindrical wheels indicating bridge misalignment adjusts the two power supplies to correct such misalignment. If the misalignment of skewing is due to an off-centered load encountered by the bridge, the corresponding adjustments of the torque outputs of the motors compensate for such a load. If the overload is too great, the increased skew angle will then reach the limits which shut off the power supply.

3,703,017

ALTERNATING SQUIRT WINDSHIELD WASHER

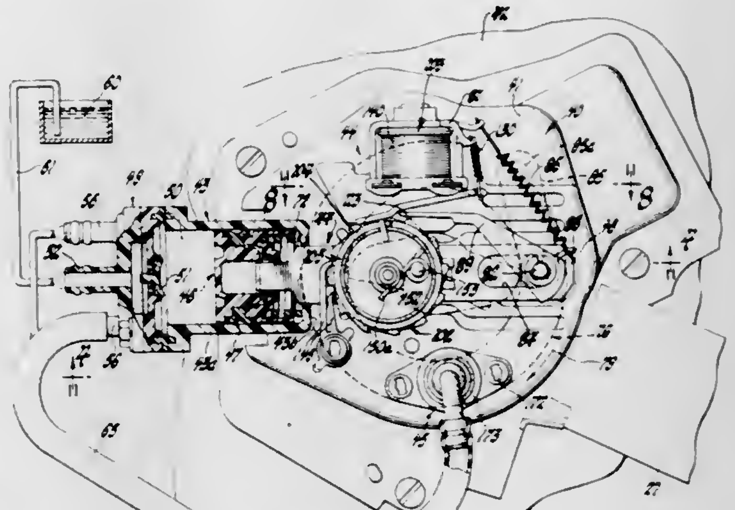
Ralph W. Edwards, Bellbrook, and Ronald G. Petry, Xenia, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 7, 1970, Ser. No. 95,825

Int. Cl. B60s *1/48*

U.S. Cl. 15—250.02 **2 Claims**

In a preferred form, this disclosure relates to a windshield cleaning apparatus for cleaning a windshield of an automotive vehicle. The windshield cleaning apparatus comprises a wiper unit having first and second oscillatable windshield wipers which are movable in opposite directions through inboard and outboard strokes during each cycle of operation and a washer unit having a pump and a diverter valve means actuated in timed relationship with the wiper unit to effect alternate squirting of all of the washer fluid being delivered by the pump in the path of movement of the first wiper as the latter is moved through its inboard stroke and to squirt all of the washer fluid being delivered by the pump in the path of movement of the second wiper as the latter is being moved through its outboard stroke during each cycle of operation of the wipers.



3,703,018

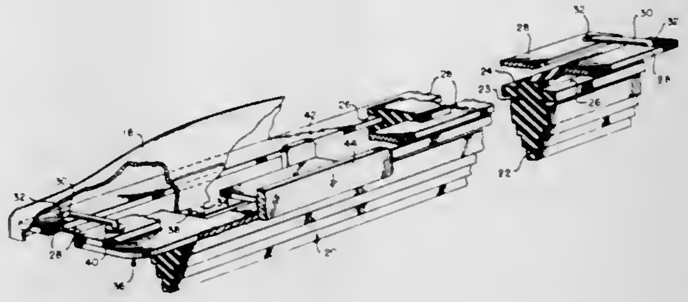
REPLACEMENT WINDSHIELD WIPER UNIT

Lazar I. Seiler, and James P. Nicholas, both of Norwalk, Conn., assignors to Yankee Metal Products Corporation, Norwalk, Conn.

Filed Aug. 4, 1971, Ser. No. 168,959

Int. Cl. B60s *1/02*

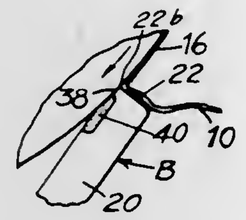
U.S. Cl. 15—250.42 **9 Claims**



A windshield wiper replacement unit is disclosed, incorporating means for interlocking the unit with a conventional wiper arm pressure-distributing bow or bridge. The replacement unit consists of a resilient elastomeric wiper blade, and a pair of flat, narrow, metal rails which are received edgewise in and extend along grooves let into opposite side faces of the elastomeric wiper blade, straddling the wiping edge of the blade to provide lateral rigidity while allowing longitudinal flexibility of the assembly so that the wiping edge of the blade can conform to contour changes in the surface of the windshield. The rails are fastened together at their ends to sandwich the elastomeric wiper blade between them and are adapted to be slidingly received between paired claws at opposite ends of the pressure-distributing wiper arm bow. One of the rails is provided with a pivotable latch lever positionable to trap a claw of the bow structure and thereby restrict sliding movement of the replacement wiper unit relative to the bow.

3,703,019
SURFACE CONFORMING WEAR RESISTANT DOCTOR BLADE FOR ROLLS

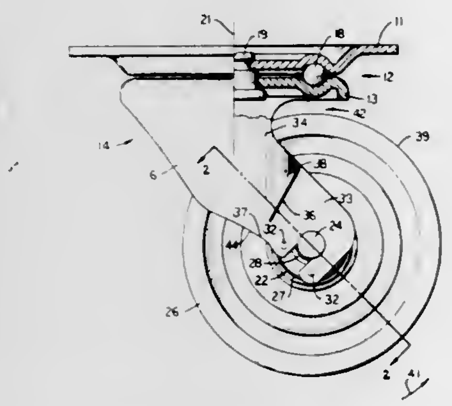
Richard L. Bratt, Holden, Mass., assignor to Norton Company, Worcester, Mass.
Continuation-in-part of Ser. No. 833,659, June 16, 1969. This application Oct. 15, 1970, Ser. No. 81,019
Int. Cl. D21g *3/00, 3/02;* **D2qg** *3/04*
U.S. Cl. 15—256.51 **14 Claims**



A composite blade has a thin flat strip with a narrow wear land, adjoining a top leading edge thereof, that easily and quickly conforms to a relatively moving surface on a cylinder in engagement therewith, and a recessed strip of wear resistant material abutting and protected by the wear land. The wear resistant strip upon contacting the moving surface reduces and controls any further wearing of the wear land to a rate compatible thereto and thereby extends the useful life of the blade.

3,703,020
ANTI-FOULING CASTER, SWIVEL-TYPE

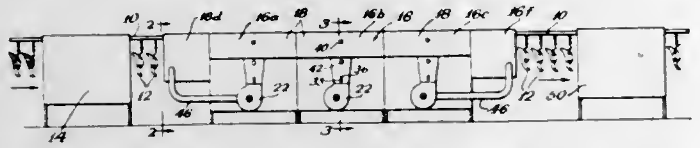
John A. Skupas, and Robert H. Godwin, both of Evansville, Ind., assignors to Bliss & Laughlin Industries, Incorporated, Oak Brook, Ill.
Filed July 10, 1969, Ser. No. 840,742
Int. Cl. B60b *33/00*
U.S. Cl. 16—31 **10 Claims**



A caster has a horn with sides widely spaced from the sides of the caster wheel except at the point of axle mounting, accomplished by reception of the axle in downwardly and forwardly inclined slots and retention therein by detent bosses.

3,703,021
POULTRY PROCESSING METHOD AND APPARATUS

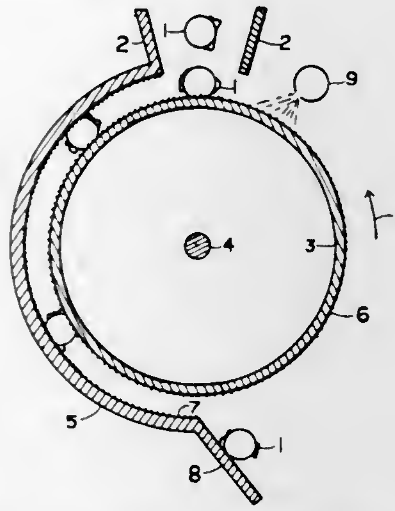
Allen W. Sharp, 1540 North Van Buren Street, Ottumwa, Iowa
Filed Dec. 28, 1970, Ser. No. 101,907
Int. Cl. A22c *21/02*
U.S. Cl. 17—47 **6 Claims**



Method and apparatus for scalding fowls in a sanitary manner so that scald water utilized in the scalding of the body of one fowl is not reused in the scalding of the bodies of other fowls.

3,703,022
SCALLOP MUSCLE AND VISCERA PRECONDITIONER

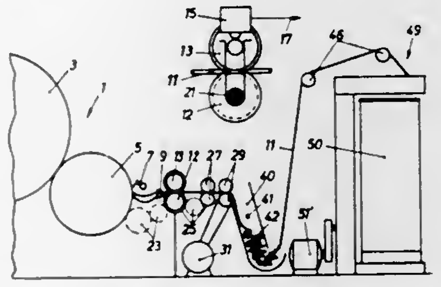
Charles Milton Bunnell, P.O. Box 1695, St. Augustine, Fla.
Filed March 17, 1971, Ser. No. 125,120
Int. Cl. A22c *29/00*
U.S. Cl. 17—53 **2 Claims**



This invention relates generally to the machine-processing of scallops and specifically to a means of improving efficiency in the eviscerating process.

3,703,023
APPARATUS FOR RENDERING TEXTILE SLIVERS UNIFORM

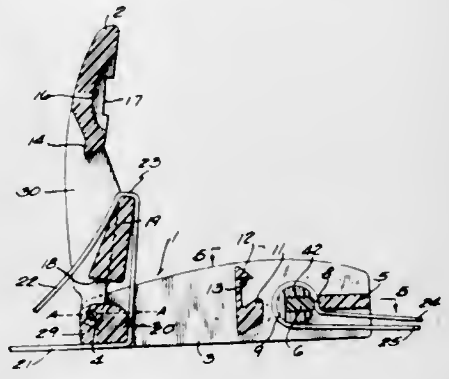
Paul Krauss, and Wolfgang Igel, both of Ebersbach, Germany, assignors to Zinser-Textilmaschinen Gesellschaft mit beschrankter Haftung, Postfach, Germany
Filed Sept. 30, 1970, Ser. No. 76,707
Int. Cl. D01h *5/38*
U.S. Cl. 19—240 **8 Claims**



Textile apparatus for reducing the unevenness in textile slivers. A card feeds sliver to a sensing device which detects any thickness variations and, through a draft control device, controls a variable speed motor which drives one of two pairs of drafting rollers, the other pair of which is driven at a substantially constant rate, the difference in speed between the pairs serving to draft the silver and also reduce the unevenness. An intermediate sliver storage device is located either (1) between the drafting rolls and the sliver coiler means which feeds the sliver into a can, or (2) between the card and the sliver sensing device. Photoelectric detecting means monitors the level of the sliver in the storage device and controls a second variable speed motor which, in the first modification drives the sliver coiler means, and in the second modification drives the card to maintain substantially constant the sliver level in the storage device. Either pair of drafting rolls may be variably driven, and each pair is provided with a tacho-generator to monitor its speed, the two tacho-generators operating in the event of any variation in the speed of the normally constant speed rolls to further vary, through the draft control device, the speed of the variable speed rolls to compensate for any erratic variation in the constant speed rolls. The second variable speed motor is controlled by varying the field current which effects a more gradual speed change and is advisable because of the high inertia of the card and the sliver coiler means.

3,703,024
BUCKLE

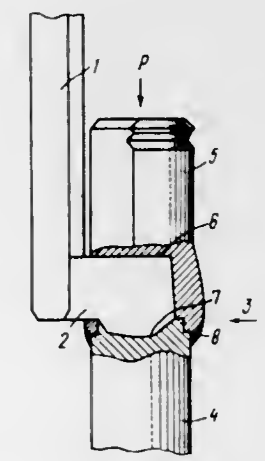
Edwin L. Johnson, 5808 Eastwood Lane, Grafton, Wis.
Filed Nov. 23, 1971, Ser. No. 201,406
Int. Cl. A44b *21/00, 11/06*
U.S. Cl. 24—68 CD **5 Claims**



A buckle construction which adapts to use in cargo and vehicular tie-down apparatus wherein a secure and positive control is required and when operation of the tie-down permits relatively simple tightening and untightening of the strap apparatus used for such securing means.

3,703,025
METHOD OF MAKING A COMPOSITE STEEL-ALUMINUM ANODE ROD FOR ELECTROLYSIS OF ALUMINUM

Aron Markovich Povolotsky; Vyacheslav Petrovich Sushkin; Anatoly Semenovich Fateichev, and Nikolai Vasilievich Gavrilov, all of Leningrad, U.S.S.R., assignors to Leningradskoe Proektno-Experimetalnoe Otdelenie Vsesojuz-Nogo Gosudarstvennogo Nauchno Issledovatelskogo I Proekt-Nogo Instituta Vniiproektelektromontash, Leningrad, U.S.S.R.
Filed April 6, 1971, Ser. No. 131,670
Int. Cl. B23p *11/02*
U.S. Cl. 29—446 **1 Claim**

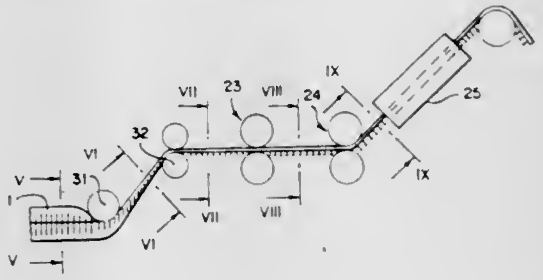


The disclosure relates to a composite steel-aluminum anode rod comprising an aluminum bar having a tail portion extending aside therefrom and a steel rod consisting of two portions. One portion of the steel rod has a socket, in which there is rigidly fixed the tail portion of the aluminum bar in the process of welding both portuons of the steel rod. The second portion of the steel rod is butt-welded to the tail portion of the aluminum bar.

A method of making a composite steel-aluminum anode rod, providing for butt welding of one of the portions of the steel rod to the tail portion of the aluminum bar, after which operation the tail portion of the aluminum bar is put into the socket in the second portion of the steel rod. Then the steel rod is squeezed and both portions thereof are welded in a prestressed state for rigidly fixing the prestressed state of the weld joint between the steel rod and the aluminum bar.

3,703,026
APPARATUS FOR MANUFACTURING A SLIDE FASTENER

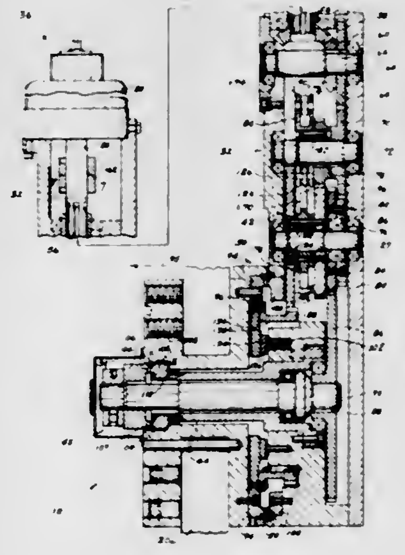
Wilhelm Uhrig, Mannesmannstrasse 11, 56 Wuppertal-Elberfeld, Germany
Filed May 10, 1971, Ser. No. 141,707
Claims priority, application Germany, May 13, 1970, P 20 23 412.2
Int. Cl. B29d *5/00*
U.S. Cl. 29—33.2 **14 Claims**



A method of making a slide fastener unit comprising weaving a thermoplastic monofilament through the flank portions of each of two Y-tapes, the monofilament of each tape being looped back and forth through the flanks so that the vertical sections between the flanks of one tape are in staggered or alternating relation to those of the other tape, whereafter these vertical sections are folded, embossed in the middle sections, pre-curved on the side sections and molded to fix the shape with the two tapes in fastened position. A novel folding, embossing, pre-curving, molding and ironing apparatus is also disclosed for the continuous manufacture of the slide fastener separately or in conjunction with a conventional weaving loom.

3,703,027
TURRET INDEXING ASSEMBLY

Arthur H. Geyler, Cincinnati, Ohio, assignor to The G. A. Gray Company, Cincinnati, Ohio
Filed April 1, 1971, Ser. No. 130,301
Int. Cl. B23b *29/32, 3/20*
U.S. Cl. 29—39 **11 Claims**

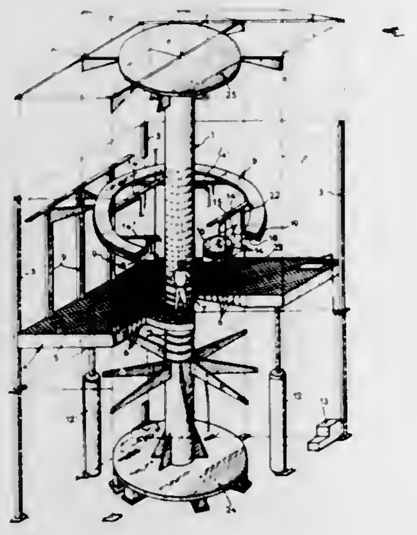


An improved machine tool includes a rotatable turret which is indexed to move a selected one of a plurality of tools into a working relationship with a workpiece which is held by a rotatable table or spindle. A releasable coupling holds the turret against rotation relative to the workpiece during machine operations. When the turret is to be indexed, the coupling is released and a pair of intermittent gears in an indexing assembly are moved into a driving relationship to effect rotation of the turret. As the turret is indexed to a new position, the intermittent gears are moved out of the driving relationship and into a positioning relationship with each other to interrupt rotation of the turret. To prevent unnecessary loading on the intermittent gears, a holding mechanism retains the turret against rotation during the initial and final portions of an indexing cycle independently of the intermittent gears. This holding mechanism includes an escapement wheel which is engaged by a roller carrier during initial and final portions of the indexing cycle to retain the turret against rotation while the coupling is being disengaged and re-engaged and the intermittent gears are being moved between the driving and positioning relationships.

3,703,028
METHOD FOR MANUFACTURING VERY LARGE HEAT EXCHANGERS

Maurice Bosquain, Paris; Marcel Bourjot, La Varenne-Saint-Maur, and Maurice Kirsch, Champigny-sur-Marne, all of France, assignors to L'Air Liquide, Societe Anonyme pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris, France

Filed July 28, 1970, Ser. No. 58,779
Claims priority, application France, Nov. 13, 1969, 6938976
Int. Cl. B21d *53/02;* **B23p** *15/26*
U.S. Cl. 29—157.3 R 3 Claims



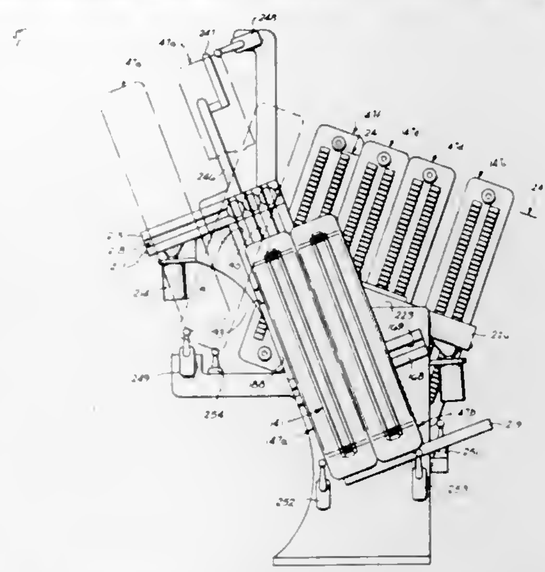
Process for manufacturing a heat exchanger of the type with a nest of tubes formed of concentric layers of wound pipes between a central core and an outside covering, means of distributing and/or collecting fluid at both ends of the nest of tubes, as well as means for transferring fluid longitudinally in the interstitial space between the wound pipes, in which the core is placed in the space with its axis vertical, and the pipes, previously out to the required length, attached at one end in a distribution or collection system, wound round the said core by means of a rotary movement and a translation movement in relation to the core, and attached at the other end to the other collection and/or distribution device respectively.

3,703,029
APPARATUS FOR FORMING WIRE SPRINGS AND WELDING CONTACTS TO THE SPRINGS

William C. Kent, Gahanna, Ohio, assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Jan. 30, 1970, Ser. No. 7,029
Int. Cl. B23p *19/04*
U.S. Cl. 29—208 D 16 Claims

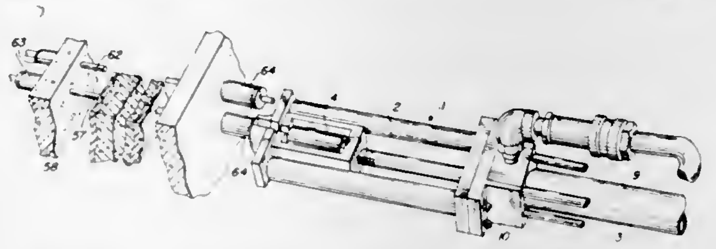
Certain types of wire spring assemblies include a plurality of parallel, spaced wires extending from opposite sides of a block formed of an insulating material. A plurality of the wire spring assemblies are loaded into a rack and the rack is attached to a dispensing mechanism for feeding serially successive wire block assemblies from the rack. Adjacent pairs of the wire springs extending from one side of the block are twisted together and coined. The opposite ends of the wire springs are coined and have contacts welded thereto. Portions of the wire springs extending from both sides of the wire block are formed at offset angles and are thereafter loaded into another rack which is attached to an unloading mechanism so that the completed wire spring assemblies may be transferred to a subsequent assembly station and used in the formation of a switching assembly.



3,703,030
IMPROVEMENTS IN TENSIONING DEVICES

James S. Simms, 5301 W. Patterson, Chicago, Ill.

Filed Sept. 26, 1969, Ser. No. 861,364
Int. Cl. B23p *19/04*
U.S. Cl. 29—252 16 Claims

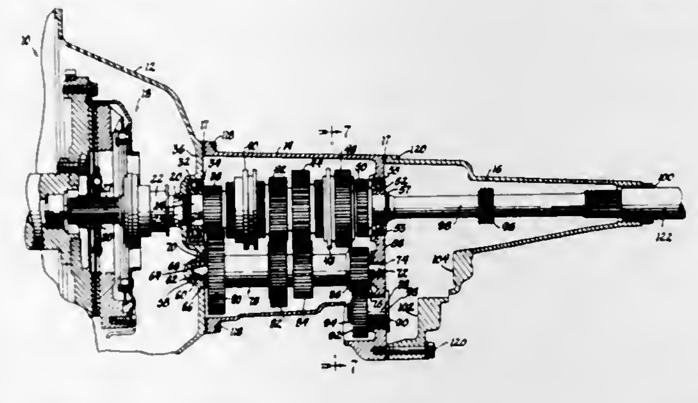


Apparatus for tensioning cables embedded in concrete, including fluid actuated units, cable gripping members, jacking means and a de-tensioning assembly permitting to cut off the excess portion of the cable without danger to personel and equipment.

3,703,031
METHOD OF MANUFACTURING AND ASSEMBLING TRANSMISSION COMPONENTS

James W. Fodrea, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 875,271, Nov. 10, 1969, Pat. No. 3,645,147. This application March 15, 1971, Ser. No. 124,394
Int. Cl. B23p *21/00*
U.S. Cl. 29—469 6 Claims

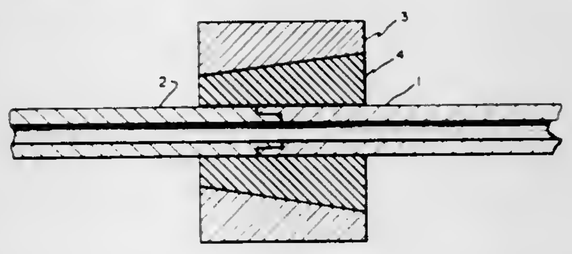


A transmission including a die cast transmission housing which is readily convertible for use with three-, four-, or five-speed, sliding gear, fully synchronized transmission assemblies, which assemblies may be accomplished on the motor vehicle, thereby eliminating the need for separate transmission assembly facilities, and, when used as a five-speed transmission, including a novel first and reverse duplex gear arrangement in the rear extension housing.

3,703,032
DIFFUSION BONDING PROCESS

Roy I. Batista, Palos Verdes Estates, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Aug. 14, 1970, Ser. No. 63,705
Int. Cl. B23k *5/22, 31/02*
U.S. Cl. 29—493 6 Claims

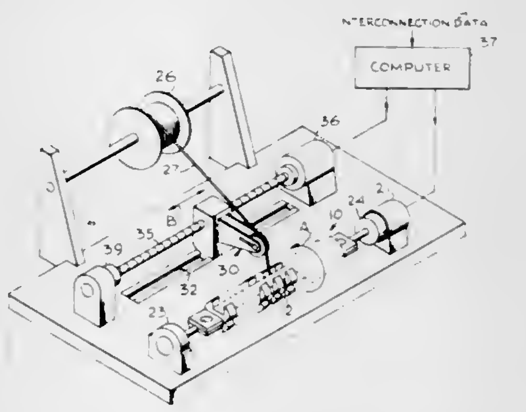


A diffusion bonding process may be performed by heating a joint of two metal tubes in tight restriction. The difference in the coefficient of thermal expansion between the metal tubes and a retaining sleeve and wedge causes radial pressure which diffusion bonds the tubes at the joint.

3,703,033
COMBINED COMPONENT AND INTERCONNECTION MODULE AND METHOD OF MAKING

Sergio A. Alessio, Elmhurst; Weichien Chow, Park Forest, both of Ill.; Marion Kosem, Willoughby Hills, Ohio, and Charles F. Valach, Western Springs, Ill., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed June 22, 1970, Ser. No. 48,317
Int. Cl. H01b *13/00;* **H05k** *3/00*
U.S. Cl. 29—624 7 Claims

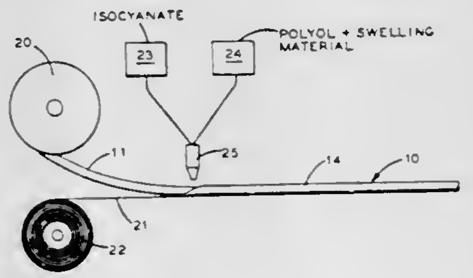


A combined component and interconnection module having a plurality of components, such as integrated circuit modules, directly mounted to and electrically connected with an interconnection pattern so as to avoid the need for the conventional printed circuit board or other external means normally required to provide interconnections between these components. The interconnection pattern is formed using computer-controlled winding apparatus to form wire loops in predetermined slots of a core in a predetermined sequence, the wire loops on one side of the core being cut to permit the remaining loops to provide the desired interconnection pattern. The components of the combined module are mechanically and electrically connected to the core and interconnection pattern by component terminals which pass into respect core slots for soldering to loop wire portions therein. Selected component terminals also may be advantageously adapted to serve as output terminals for the resulting combined module. Power busses may additionally be incorporated within the combined module. A number of advantageous assemblies for these combined modules are also disclosed.

3,703,034
METHOD OF MAKING WATERPROOF ELECTRICAL CABLE

Bernd Eilhardt, Vinnhorst, and Diethart Pelz, Langenhagen, both of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Division of Ser. No. 858,833, Sept. 17, 1969, Pat. No. 3,558,801. This application Sept. 14, 1970, Ser. No. 71,887
Int. Cl. H01b *13/00;* **B23k** *31/02*
U.S. Cl. 29—624 3 Claims

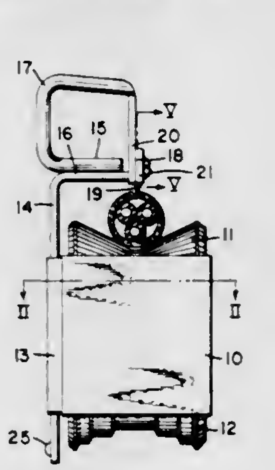


A method of making flexible waterproof electrical communications cable, having a filling disposed between the cable core and the sheath thereof; the filling being constituted of a synthetic resin foam which is of the open cell type; water swellable particle matter being distributed within the cells of the foam.

3,703,035
CABLE STRIPPER

Everett L. Handy, 77 Arizona Avenue, Holden, Mass.

Continuation of Ser. No. 792,927, Jan. 22, 1969, abandoned. This application June 14, 1971, Ser. No. 153,007
Int. Cl. B26b *27/00*
U.S. Cl. 30—90.9 5 Claims



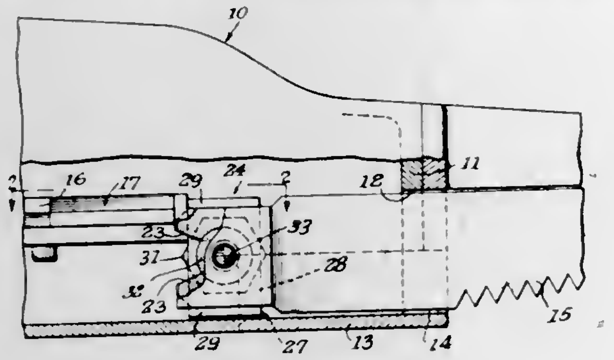
In general, this invention relates to a device for stripping the outer covering of multi-strand electrical cable; more specifically, it has to do with a device that splits the covering along a given length of cable.

3,703,036
SEPARABLE CONNECTION MEANS FOR RECIPROCATING SAW BLADES

Ralph Karubian, 2001 Gage Avenue, Los Angeles, Calif.

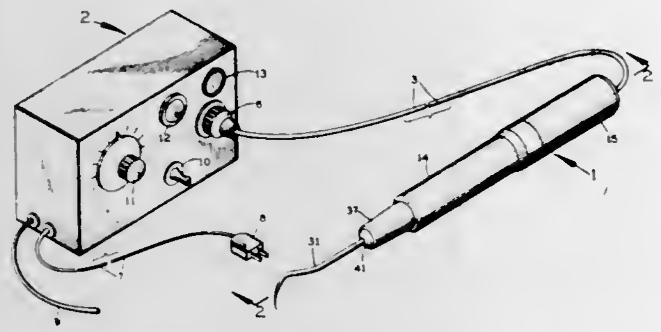
Filed May 3, 1971, Ser. No. 139,782
Int. Cl. B26b *1/00*
U.S. Cl. 30—339 6 Claims

A separable connection between the end of a saw blade and the slide that reciprocates it, the connection including a shoulder screw that tightens two clamp members, one on each side of said blade, one of said members being an integral part of the slide, the shoulder of said screw fitting the enclosed circular portion of a notch in said blade end when the latter is clamped, and said notch having a reduced leadin portion extending from the hole in the blade through the adjacent end of the blade, thereby allowing the blade to be slipped out from between said clamp members when the screw is retracted sufficiently to withdraw the shoulder from the hole, while the screw and the two clamp members remain loosely attached to the slide so a replacement saw may be secured to the slide with easy facility.



3,703,037
ULTRASONIC DENTAL HAND-PIECE WITH DETACHABLE TREATMENT TOOLS

Seymour Robinson, 1561 N.E. 179th Street, Miami, Fla.
Filed June 25, 1970, Ser. No. 49,642
Int. Cl. A61c *3/06*
U.S. Cl. 32—58 **5 Claims**

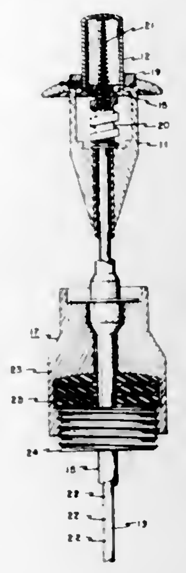


A dental hand-piece including an electronic ultrasonic transducer energized by a cable connecting an electronic ultrasonic generator including a coupling device for energizing interchangeable treatment tools retained in the hand-piece. Each of the tools and coupling device having a bore therein for conducting pressurized water from said hand-piece for supplying water to the area of the tooth contacted by the tip portion of the tool and including a pair of typical tools for tooth treatment.

3,703,038
COMBINATION ROTATABLE OIL DIP STICK AND WIPER

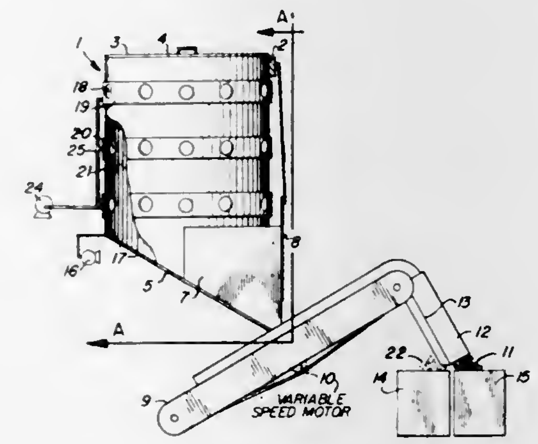
Carroll G. Smith, P.O. Box 188, Arco, Idaho
Filed May 3, 1971, Ser. No. 139,489
Int. Cl. G01f *23/04*
U.S. Cl. 33—126.7 R **3 Claims**

The dip stick gauge of this invention includes a wiper housing at the entranceway of a fluid tank or reservoir having a multiplicity of resilient annular wiper rings engageable with the dip stick gauge being operable to wipe fluid residue from the gauge when it is removed from the tank or reservoir. The dip stick gauge assembly includes a hollow tubular housing having an opening in one of its side walls. A gauge rod is disposed in the tubular housing and includes indicia on one of its side walls coincident with the opening in the housing. Means is provided at one of the terminal ends of the rod being operable to rotate the rod in the housing out of the opening so that fluid residue on the rod on the indicia will not be wiped from the indicia as the dip stick wiper gauge is removed from the wiper housing.



3,703,039
ANNEALING TOWER

Robert A. Hard, Lewiston; Loyal A. Stoyell, Tonawanda, and Claude F. Young, Niagara Falls, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.
Filed Dec. 10, 1969, Ser. No. 883,691
Int. Cl. F26b *19/00*
U.S. Cl. 34—174 **12 Claims**

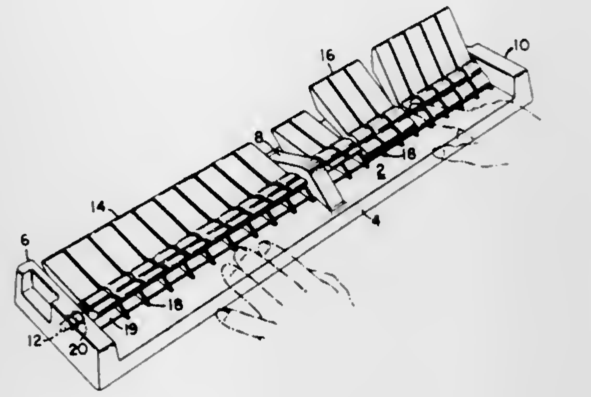


Method and apparatus for producing non-friable cast alloy shapes by controllably cooling them after casting. The alloy shapes are gravity fed through an annealing insulated tower at a controllable speed proportional to the rate and degree of cooling required to produce the optimum characteristics for the particular alloy shapes cast, such alloy shapes being ferrosilicon, silico-manganese, ferromanganese and the like.

3,703,040
KEYBOARD TEACHING AID

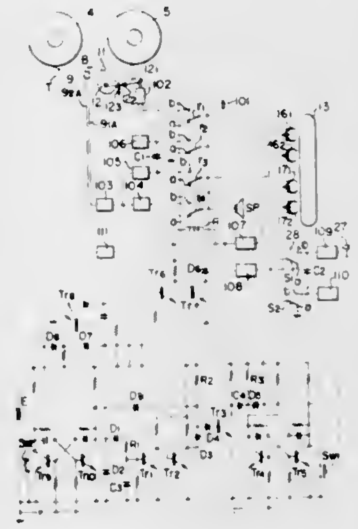
Raymond Roger Hill, 11 White Cottage, Angwin, Calif.
Filed July 6, 1970, Ser. No. 52,510
Int. Cl. G09b *13/02*
U.S. Cl. 35—5 **1 Claim**

A group of hand actuated keys are pivotally mounted on a rod supported by a frame. Means are provided to prevent adjacent keys from interracting with each other while allowing a key to be placed at any angle of rotation in order to provide teaching functions.



3,703,041
MAGNETIC TEACHING MACHINE WITH SELECTIVELY OPERABLE REPETITIVE AND NON-REPETITIVE LEARNING MODES

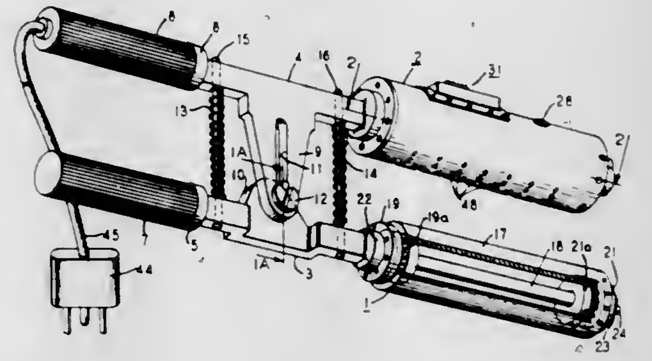
Yutaka Kohtani, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Shimomaruko, Tokyo, Japan
Filed Sept. 11, 1970, Ser. No. 71,514
Claims priority, application Japan, Sept. 20, 1969, 44/74987
Int. Cl. G09b *5/04;* **G11b** *5/86*
U.S. Cl. 35—35 C **5 Claims**



An magnetic recording apparatus comprises a magnetic tape and an endless magnetic recording medium. The former carries information signals such as auditory teaching materials recorded upon the first track at a predetermined interval and control signals recorded upon the second track. In reproducing the information signals, they are reprinted or transferred upon the endless magnetic recording medium which has the length substantially equal to the length of the information signal record plus the length of the spacing between two adjacent information signals recorded in the first track of the magnetic tape. After the transfer of the information signals from the magnetic tape to the endless recording medium a student may record his imitation upon the endless recording medium. Thus, the information such as teaching materials and imitation recorded upon the endless recording medium may be repetitively reproduced if desired.

3,703,042
PORTABLE HAND-OPERATED PRESSING DEVICE FOR CLOTHING OR THE LIKE

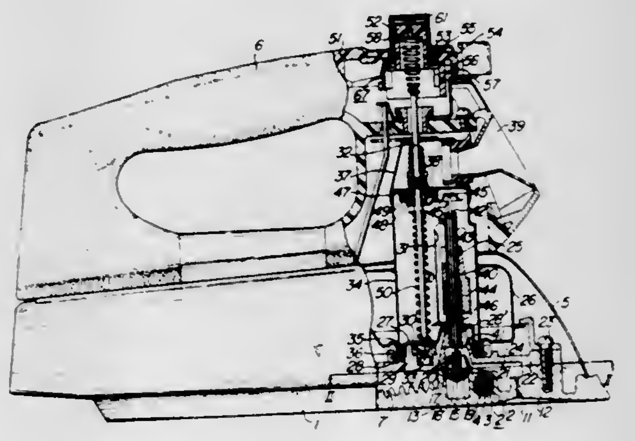
Sally J. Smith, 299 Lyons Avenue, P.O. Box 4271, Newark, N.J.
Filed Dec. 9, 1970, Ser. No. 96,446
Int. Cl. A47j *51/00*
U.S. Cl. 38—69 **11 Claims**



A portable device for rolling, pressing and/or steam-ironing garments and fabrics. Scissor-like handles manipulate a pair of cylinders which progressively clasp between them material to be pressed. At least one of the cylinders contains a heating element; and one or both of the cylinders are rotatable. In a preferred embodiment, one cylinder is stationary, and contains a water tank above the heating element for generating steam to moisten the fabric during the pressing operation.

3,703,043
STEAM IRON

Nobutaka Ogata, Shijonawate; Riyonzi Kumamoto, Toyonaka, and Shuzi Asada, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed July 19, 1971, Ser. No. 163,609
Claims priority, application Japan, July 21, 1970, 45/64213; Aug. 20, 1970, 45/73610; April 5, 1971, 46/21137
Int. Cl. D06f *75/06*
U.S. Cl. 38—77.83 **13 Claims**



A steam iron in which a large number of steam nozzles are grouped into a plurality of groups and means for delivering steam to said respective groups is shiftable, from a state of delivering steam to any one of said groups to a state of delivering steam to any other selected group, and further indicator means is provided to indicate which of said groups steam is being delivered to.

3,703,044

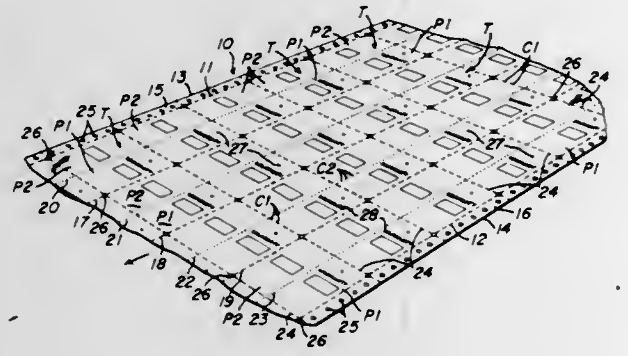
WEB OF MULTIPART TICKETS AND METHOD OF MAKING AND USING SAME

Walter D. Gregory, Dayton, Ohio, assignor to The Monarch Marking System Company, Dayton, Ohio

Filed June 21, 1971, Ser. No. 155,170

Int. Cl. A44c *3/00*

U.S. Cl. 40—2 **12 Claims**



There are disclosed two embodiments of the invention relating to a web of multipart tickets capable of use in a high speed printer. The tickets are shown to be bounded by parallel lines of heavy partial severing and the parts of each ticket which extend in a transverse direction in the web are formed by lines of light parallel severing. Feed strips are provided at each margin of the web and each feed strip contains feed holes which are capable of being engaged by a conventional sprocket or tractor feed mechanism of a high speed printer. The part of each multipart ticket which is to be attached directly to the merchandise contains an aperture to facilitate attachment to the merchandise. Also disclosed is a method of making and using a web of multipart tickets.

3,703,045

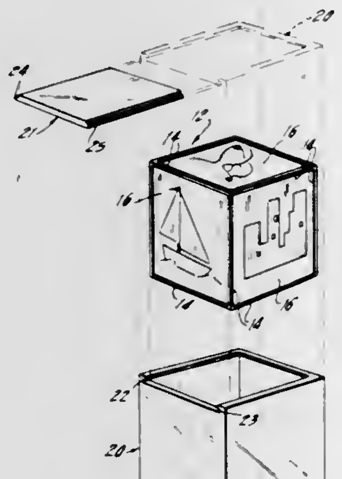
PHOTO BLOCK

Morton Nyman, Riverdale, N.Y., assignor to Al Nyman & Son, Inc., New York, N.Y.

Filed Jan. 18, 1971, Ser. No. 107,306

Int. Cl. G09f *1/12*

U.S. Cl. 40—152 **6 Claims**



A photo display device is constructed of a transparent, closed cube-shaped shell in which a side of the shell is removable, by sliding movement in the plane thereof, for mounting of pictures against all six interior surfaces of the shell.

3,703,046

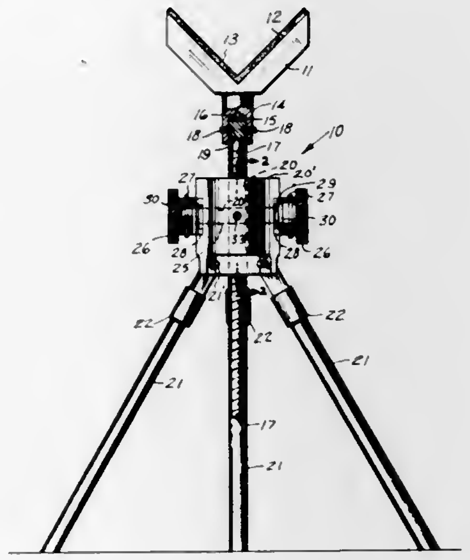
MICRO ADJUSTABLE SHOOTERS' TRIPOD

Antonio C. Barone, 74 Michele Drive, Depew, N.Y., and Stephen Jasinski, 42 Nassua Lane, Cheektowaga, N.Y.

Filed June 3, 1970, Ser. No. 42,996

Int. Cl. F41c *29/00*

U.S. Cl. 42—94 **2 Claims**



An adjustable mechanical device for supporting a rifle or pistol while taking aim, thus greatly increasing the shooters' accuracy. This device includes a V shaped rest portion for supporting the rifle or pistol, and may be used for target shooting from a bench or from the prone position after removing the leg extensions. The device also may be used for shooting from a sitting position when the leg extensions are slipped over the tripod legs. The V shaped rest member may be elevated to any desired position by nob controls.

3,703,047

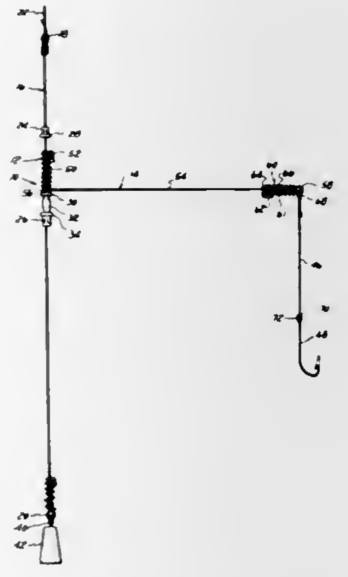
QUICK-DETACHABLE OUTRIGGER FISHING DEVICE

Harold E. Schenavar, 18696 Inkster Road, Detroit, Mich., and Irving L. Pierce, 11363 Garfield, Detroit, Mich.

Filed May 10, 1971, Ser. No. 141,845

Int. Cl. A01k *91/04*

U.S. Cl. 43—43.15 **8 Claims**



Slidably mounted between fixed stops on a drop wire weighted at its lower end with a sinker is a helical coiled wire spring having a diameter sufficiently larger than the diameter of the drop wire or leader to permit the sidewise displacement of the spring. This displacement provides a sufficient clearance therebetween to permit the insertion of the reversely-bent end portion of the vertical arm of an L-shaped outrigger. The elongated approximately horizontal arm of the outrigger carries at its outer end a quick-operating coupling for a fish hook or for the leader of a fish hook. The outrigger is releasably secured to the spring by means of the reversely-bent end portion of the vertical arm.

3,703,048

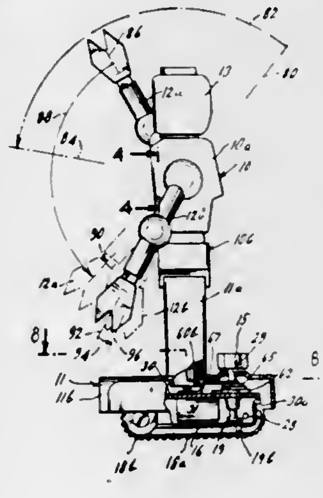
TOY ROBOT

Julius Cooper, New Hyde Park, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.

Division of Ser. No. 800,426, Feb. 19, 1969, Pat. No. 3,587,191. This application Jan. 27, 1971, Ser. No. 110,023

Int. Cl. A63h *13/02*

U.S. Cl. 46—148 **7 Claims**



A toy robot having a first arm for automatically simulating a karate chop when the second arm is moved slightly. The arm operation is accomplished by rotating the right arm, thereby winding up a spring, and cocking it in a raised position. The cocking mechanism is released to allow the spring to force the right arm downward when the left arm is moved slightly.

3,703,049

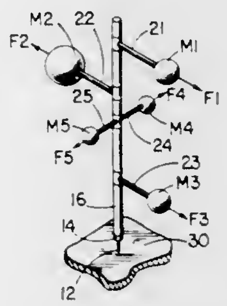
WHIRLING TOY

Thomas S. Beaubien, Palos Verdes, Calif., assignor to Miller C. Johnson, Manhatten Beach, Calif., a part interest

Filed June 28, 1971, Ser. No. 157,173

Int. Cl. A63h *1/32*

U.S. Cl. 46—47 **10 Claims**



A toy in the form of an elongate member to be balanced vertically on the player's hand or finger and which, by rotary motion of the hand, can be made to whirl while being balanced. Weight centers in the toy are arranged so that the toy is dynamically balanced when the rotating axis is held vertically; but so that a centrifugal couple is formed when the lower end of the toy is moved in an arc around an imaginary vertical line that extends through the center of gravity of the toy when the device is held nearly vertically. In the preferred embodiment, the toy is composed of interconnected portions that include broad surface areas such, for example as different sections of a sheet material. The mass centers in that case are represented by the centroids at different areas of the toy. Two of the mass centers or centroids occur at vertically spaced points on one side of the rotational axis of the toy with the greater mass above. A third mass center is located on an opposite side of the rotational axis at a level intermediate the other two mass centers. That arrangement of the masses permits making the toy at low cost while facilitating the representation of various figures.

3,703,050

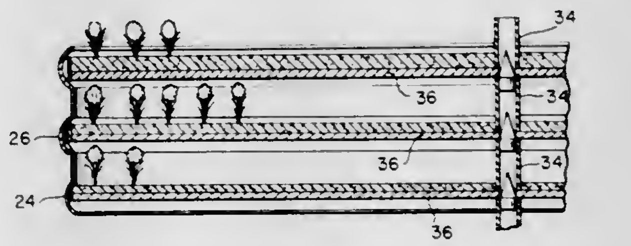
PALLET SPOOL ASSEMBLY

Paul R. Edwards, Redondo Beach, Calif., assignor to Edwards Enterprises of Orlando Inc., Orlando, Fla.

Filed Nov. 3, 1970, Ser. No. 86,535

Int. Cl. A01g *9/02*

U.S. Cl. 47—34.11 **2 Claims**



This invention relates to a pallet spool assembly comprising a central hub having means therein whereby a plurality of spools may be stacked, a substantially planar surface surrounding the hub and adapted to support a plant-growth medium, and rim means surrounding said planar surface and being of a height sufficient to retain a plant-growth medium on said planar surface.

3,703,051

METHODS FOR IMPROVING THE GROWTH CHARACTERISTICS OF PLANT MATERIAL SUCH AS SEEDS AND GROWING PLANTS

Pearl Weinberger, 290 Buena Vista Road, Ottawa, Ontario, Canada

Continuation-in-part of Ser. No. 808,260, March 18, 1969, abandoned. This application July 29, 1971, Ser. No. 167,444

Int. Cl. A01c *1/00*

U.S. Cl. 47—58 **4 Claims**

The growth characteristics of plant material such as seeds and growing plants are improved by means of subjecting the material to vibrations of predetermined frequencies. Chilling is required for seeds exposed to audible frequencies although the chilling is optional when the seeds are exposed to higher frequencies. Also, the seeds must be imbibed to a certain extent when subjected to audible frequencies, the extent of imbibition being controlled through the agency of physical or physiological limitations. In the audible range, the seeds are exposed for a minimal optimal period of four weeks. Seeds exposed to ultrasound frequencies may be, however, air dry and are exposed in such range for at least several seconds.

3,703,052

PROCESS FOR PRODUCTION OF PIPELINE QUALITY GAS FROM OIL SHALE

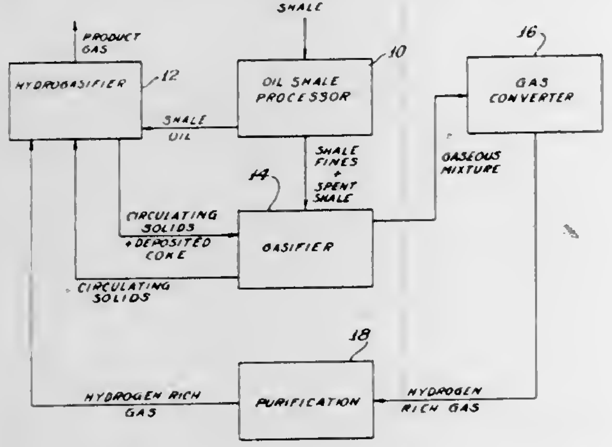
Henry R. Linden, La Grange Park, Ill., assignor to Institute of Gas Technology

Filed Nov. 12, 1970, Ser. No. 88,652

Int. Cl. C01b *2/14, 2/22*

U.S. Cl. 48—215 **17 Claims**

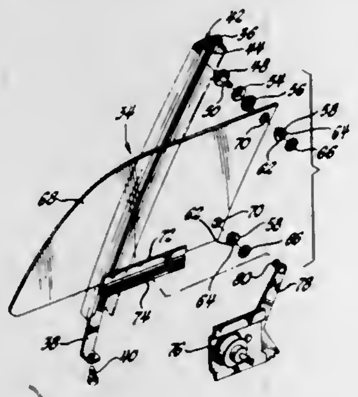
A process for producing a high methane content, synthetic pipeline gas from oil shale. Oil shale is processed so as to provide a shale oil fraction, and solids including shale fines and spent shale. The shale oil and a hydrogen rich gas are introduced into a hydrogasifier chamber which is maintained at a temperature of about 1,100°-1,600° F., and at a pressure of about 500-2,000 psig, so as to convert the shale oil by hydrogasification into a high methane content, synthetic pipeline gas, normally liquid aromatic hydrocarbons, and a carbonaceous solid residue. Pulverized solids are passed through the hydrogasifier and into a gasifier chamber, maintained at a pressure of about 500–2,000 psig. and at a temperature of about 1,500°–2,100° F., to remove the carbonaceous residue or coke formed in the hydrogasifier. Shale fines and spent shale are also introduced into the gasifier wherein a gaseous mixture is formed by reaction with steam and oxygen or with steam and air. The gaseous mixture is then converted to a hydrogen rich gas either directly, by a carbon monoxide shift reaction (when steam and oxygen are used in the gasifier) or indirectly, by the steam-iron process (when steam and air are used in the gasifier). In the steam-iron process, the gaseous mixture is the reducing agent for iron oxides formed when added steam is converted to hydrogen over the reduced iron oxides.



The hydrogen rich gas is purified and primarily includes hydrogen alone, in the case of the steam-iron process, or a combination of hydrogen and methane, in the case of the carbon monoxide shift process. This hydrogen rich gas is thereafter introduced to the hydrogasifier chamber to form the high methane content gas. All or a portion of the solids leaving the gasifier are recirculated back to the hydrogasifier.

3,703,053
VEHICLE WINDOW INSTALLATION

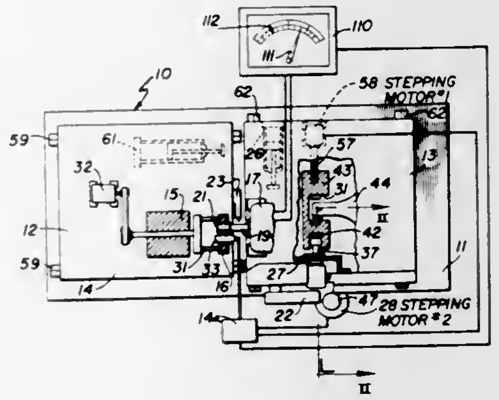
Delbert D. De Rees, Utica, and Gerald R. Walker, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Sept. 17, 1971, Ser. No. 181,350
Int. Cl. E05d *15/16, 13/02*
U.S. Cl. 49—428 **3 Claims**



A door mounted vehicle window installation particularly adapted for easy positional adjustment of the window, the installation including a guide member projecting above the upper margin of the door and carrying a pair of follower units each having a pivot shaft projecting perpendicularly to the path of motion defined by the guide member, a pair of circular eccentric bushings each rotatably supported on a respective one of the pivot shafts, and a window having a pair of circular apertures therein adapted to rotatably receive a corresponding one of the bushings. When the window is in a closed or raised position, each bushing is situated above the upper margin of the door for easy accessibility and each functions upon rotation about the corresponding pivot shaft to shift the position of the window relative to the door.

3,703,054
GRINDING MACHINE

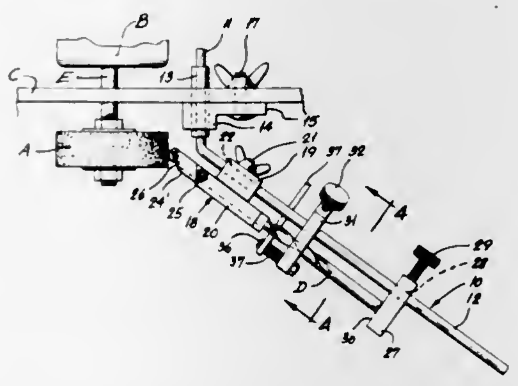
Herbert R. Uhtenwoldt, Worcester, Mass., assignor to Cincinnati Milacron-Heald Corp., Worcester, Mass.
Filed May 17, 1971, Ser. No. 143,926
Int. Cl. B24b *49/04*
U.S. Cl. 51—165.91 **5 Claims**



A grinding machine wherein sparkout grinding is carried out with small increments of cross-feed introduced every time the load drops to a predetermined value.

3,703,055
DRILL SHARPENING DEVICE

Samuel Niquet, Charbonneau Avenue, East Freetown, Mass.
Filed Jan. 25, 1971, Ser. No. 109,296
Int. Cl. B24b *3/26*
U.S. Cl. 51—219R **2 Claims**

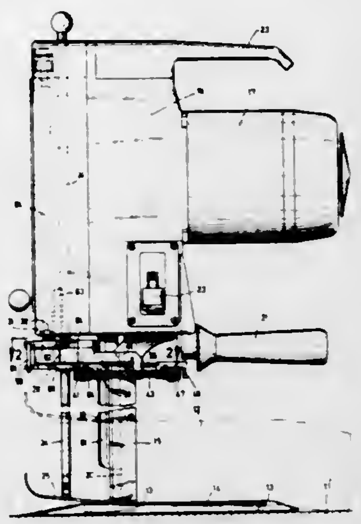


The invention relates to a drill sharpening jig in which the drill is held for grinding against a wheel by a pivotable support which has a table with an edge against which the flute edges of the drill are held, a holder and a stop for the chuck end of the drill, the support causing the drill tip to generate a conical surface for producing a progressively increasing clearance angle for the drill cutting edges.

3,703,056
KNIFE GRINDING DEVICE FOR A MOTOR-DRIVEN CUTTING TOOL

Boris Langhoff, Backnang, Germany, assignor to Krauss & Reichert Spezialmachinenfabrik, Fellwach, Germany
Filed May 13, 1971, Ser. No. 143,010
Claims priority, application Germany, May 27, 1970, P 20 25 854.2
Int. Cl. B24b *19/00*
U.S. Cl. 51—246 **4 Claims**

In a motor-driven cutting tool, at either side of the knife there are arranged rotary grinding elements supported by a grinder head reciprocating parallel to the knife. Mechanical means are provided which, as the grinder head moves in the one or the other direction, displace the one or the other grinding element and cause them to engage and thus grind alternately the two knife blade faces. The period of applying the force to said grinding elements during the reciprocation of the grinder head is changeable for grinding only selected ranges of the knife blade faces.



3,703,057
METHOD FOR THE PRODUCTION OR RESTORATION OF WORKING ROLLS FOR HOT ROLLING OF METALLIC FLAT PRODUCTS

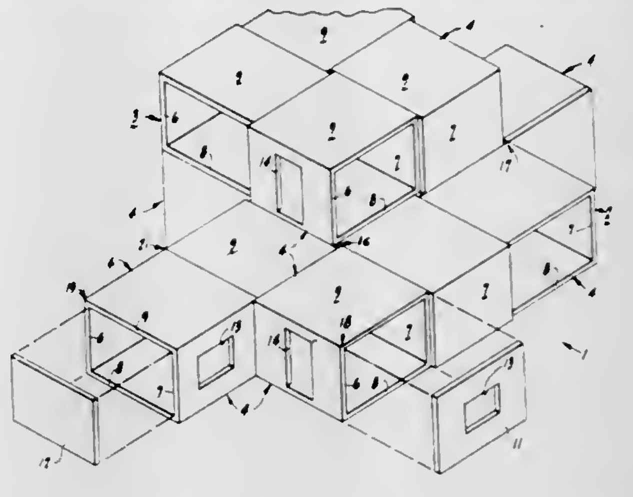
Johann Krausz, and Johan Feichtinger, both of Linz, Austria, assignors to Vereinigte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria
Filed Dec. 23, 1970, Ser. No. 101,077
Claims priority, application Austria, Dec. 24, 1969, 12039/69
Int. Cl. B24b *1/00*
U.S. Cl. 51—326 **4 Claims**

The invention relates to a method for the production or restoration of working rolls for hot rolling metallic flat products, in particular for shaping steel slabs to pre-strips on broad strip mills, wherein the improvement resides in that the central circumferential zone of the roll body is provided with a greater coarseness than the two marginal zones. With this process it is possible to employ rolls with great hardness and yet obtain an excellent roll bite, so that the efficiency is greatly enhanced.

3,703,058
MODULAR BUILDING CONSTRUCTION AND ERECTION SYSTEM UTILIZING SELECTIVELY ORIENTED MODULES

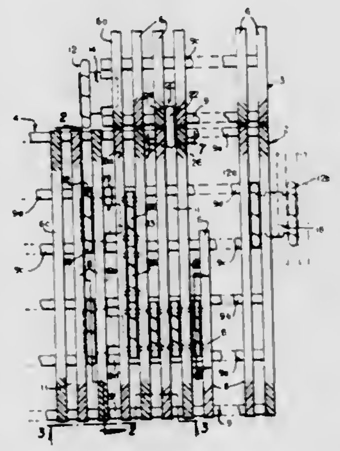
George G. Klett, Berkeley, and Gary L. Akerstrom, Moraga, both of Calif., assignors to Building Block Modules, Inc., Richmond, Calif.
Filed Sept. 14, 1970, Ser. No. 71,978
Int. Cl. E04h *1/04*
U.S. Cl. 52—79 **14 Claims**

This invention relates to a low cost system for erecting multi-room buildings from preformed modules. Precast concrete modular units having opposing side walls and opposing floor and ceiling panels are oriented in relationship to each other so that a side wall of one module closes off selectively, at least partially, an open end of an adjacent module. Fill-in end wall panels are utilized as required to complete a building construction. Additional floor levels stacked on lower levels are employed to provide a building assembly having a predetermined number of floors. Means are provided for integrally connecting together the series of modules defining each floor level. As required, additional connecting means are provided to secure overlying floor levels with floor levels lying therebelow.



3,703,059
EXTENSIBLE PERFORATE FLOOR MAT AND FRICTION DEVICE

Milton Kessler, 6690 Harrington Avenue, Youngstown, Ohio
Filed June 28, 1971, Ser. No. 157,101
Int. Cl. E04f *15/00*
U.S. Cl. 52—177 **7 Claims**

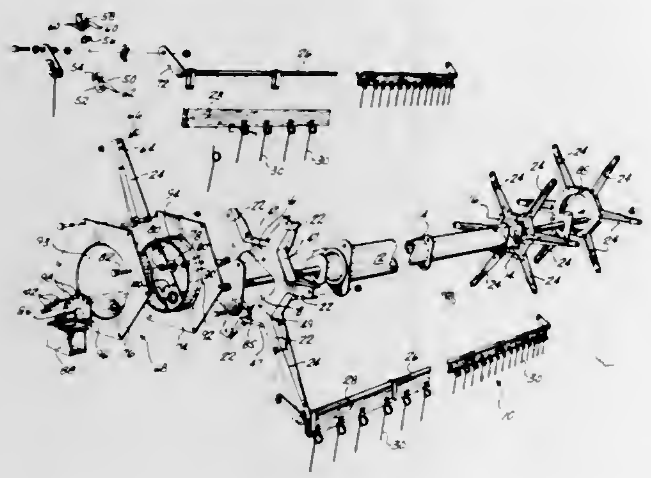


A perforate plastic floor mat and friction device having an upper surface of parallel narrow strips spaced apart approximately their own width, and a lower surface of more widely spaced strips underlying and crossing the upper strips to provide rectangular apertures, and plastic connectors having locking portions fitting into said apertures and engaging the upper and lower strips to lock together smaller such mats into larger ones.

3,703,060
HARVESTING REEL

Donald R. Gradwohl, and Archie E. Neal, both of Garfield, Wash., assignors to J. E. Love Company, Garfield, Wash.
Filed Oct. 1, 1970, Ser. No. 77,132
Int. Cl. A01d *57/02*
U.S. Cl. 56—226 **3 Claims**

A plurality of identical spiders are removably secured to an elongated, lightweight, thin walled center tube having good resistance to bending. Each spider comprises a hub member having short arm stubs and elongated arm section secured to the stubs. The arm stubs and the arm sections are of channel form in cross section, and each includes radially disposed web and gusset portions providing resistance to bending angularly of the reel and flanges of substantial depth providing resistance to bending axially of the reel. Bat support shafts are secured to the outer ends of the arms and tine carrying bats



are secured to these shafts. The radial inner space between the shafts and bats and the center tube is devoid of any truss structure which would interfere with the operation of the pick-up reel. The bats are driven by an eccentric mechanism which includes a plurality of bearings which ride on the outer periphery of a cylindrical track.

3,703,061

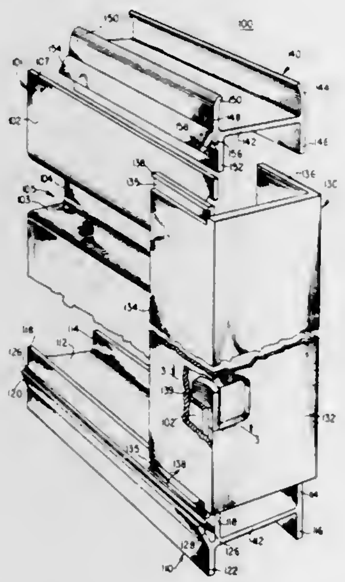
OVERHEAD DOOR CONSTRUCTION

John P. Holland, and Hein Aykens, both of Sterling, Ill., assignors to Frantz Manufacturing Company, Sterling, Ill.

Filed July 7, 1970, Ser. No. 52,952

Int. Cl. E04b *5/52;* **E06b** *3/54*

U.S. Cl. 52—475 **19 Claims**



A section of a sectional overhead garage door comprises a ribbed, plastic panel surrounded by a frame including two horizontal rails interconnected by two end rails, each horizontal rail having two spaced-apart holding flanges extending the length thereof toward the other horizontal rail and receiving the adjacent panel margin therebetween, the outer holding flange having a gripping member thereon extending toward the inner holding flange, each end rail having a tongue at each end thereof disposed in use between the adjacent panel margin and the adjacent outer holding flange and provided with an outwardly extending gripping member thereon, the holding flange gripping members being pressed into and embedded in the end rail tongues and the panel margins, with the tongue gripping members being embedded in the outer holding flanges all for securely clamping the frame to the panel and the end rails to the horizontal rails.

3,703,062

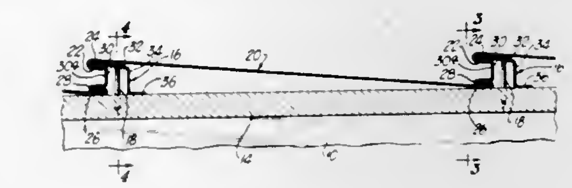
SHEET METAL ROOFING/SIDING SYSTEM WITH SEPARABLE FASTENER

John S. McKinney, Newburgh, Ind., assignor to American Metal Climax, Inc., New York, N.Y.

Filed Sept. 4, 1970, Ser. No. 69,585

Int. Cl. E04d *1/34*

U.S. Cl. 52—545 **5 Claims**



A sheet metal roofing/siding system for application on the sheathing substrate of a building wall or roof structure comprising an elongated joint strip secured to said structure in combination with a pair of elongated panel members interlocked with the joint strip to form a watertight cover. The elongated joint strips are secured to the sheathing substrate of the building structure in parallel, spaced apart configuration and the panel members are interlocked with the joint strips along upper and lower marginal edges to provide a lap siding type appearance which is watertight and easy to install and apply.

3,703,063

PROFILE MEMBER FOR WINDOWS, DOORS, FACADES, OR THE LIKE

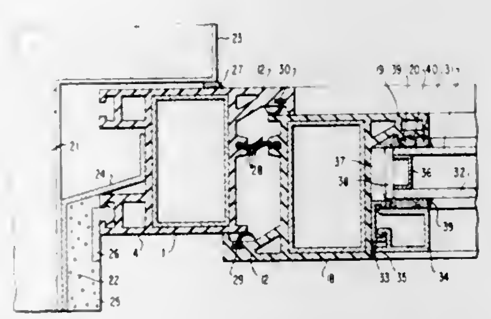
Wolfgang Budich, Sieglar; Hans Theissen, Eschmar; Hans Schaefer, Cologne-Nippes, and Walter Andree, Troisdorf, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed April 22, 1970, Ser. No. 30,832

Claims priority, application Germany, April 22, 1969, P 19 20 248.3

Int. Cl. E04c *3/30*

U.S. Cl. 52—727 **8 Claims**



A profile member for windows, doors or the like formed by a hollow closed metal section having a shell of synthetic material providing one or more projections including a glaze projection for accomodating a glass pane, a connecting projection which facilitates connection of the member to a structural building part, and an abutment projection for effecting contact producing closure with another profile member.

3,703,064

PACKAGING OF MEAT

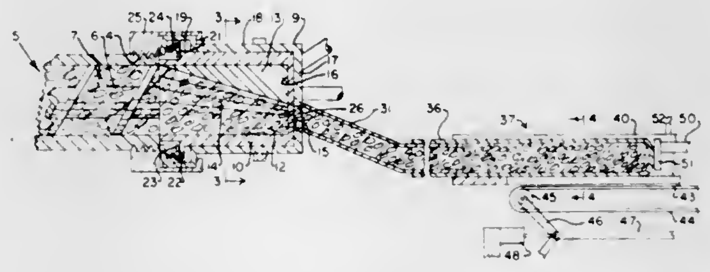
Robert C. Lugiewicz, Monroeville, Pa., assignor to Cubb-Pac Corporation, Pittsburgh, Pa.

Filed March 30, 1970, Ser. No. 23,626

Int. Cl. B65b *63/02*

U.S. Cl. 53—122 **6 Claims**

A package of meat comprising discrete pieces of meat compacted and shaped into a solid bar tightly encased within a flexible, tubular receptacle closed at both ends. The bar of meat is formed by introducing the meat pieces to a housing within which is a continuously rotating conveyor screw by means of which the meat pieces are conveyed to the discharge end of the housing that has a plurality of openings with each of which is associated an elongate tube. Each tube receives the open end of a flexible receptacle and the discharge of meat from the housing into the respective tubes is controlled by a valve which is operable to open and close the discharge openings sequentially so as to enable filling of the receptacles one after another. As each receptacle is filled, it is pushed off its associated tube, but prior to its being completely filled the



valve is operated to close the opening through which the meat is discharged and open another opening, thereby discontinuing the filling of the one receptacle and beginning the filling of another receptacle. The partially filled receptacle is removed from its associated tube and the unfilled portion of the receptacle is closed so as to provide a sealed package. During the filling of the other receptacle, a fresh receptacle may be placed over the tube from which the partially filled receptacle was removed, thereby enabling successive packages of meat to be formed continuously.

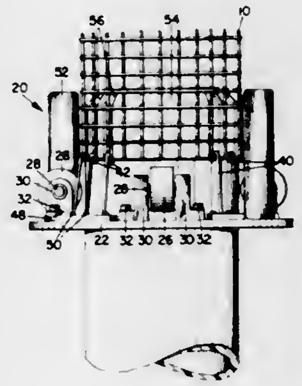
3,703,065

SLEEVING APPARATUS

Arnold Soodalter, 134 Tanglewood Drive, Longmeadow, Mass. Continuation-in-part of Ser. No. 41,005, May 27, 1970, Pat. No. 3,657,861. This application Nov. 6, 1970, Ser. No. 87,559

Int. Cl. B65b *63/00, 67/00;* **A22c** *13/00*

U.S. Cl. 53—197 **3 Claims**



Apparatus for sleeving butcher's netting onto a magazine comprising, a sleeving device having an opening therein, a supply of netting extending through the opening to the magazine, guide means and resilient fingers integral with the sleeving device and surrounding the opening and extending thereinto, the resilient fingers having offset free ends adapted for engagement with the netting on the magazine, whereby, upon movement of the sleeving device in one direction the guide means guide the apparatus relative to the magazine and the offset free ends of the fingers engage the netting and load it onto the magazine, and upon movement of the sleeving device in an opposite direction, the guide means guide the apparatus relative to the magazine and the offset free ends of the fingers slide freely relative to the netting preparatory for the next purchase.

3,703,066

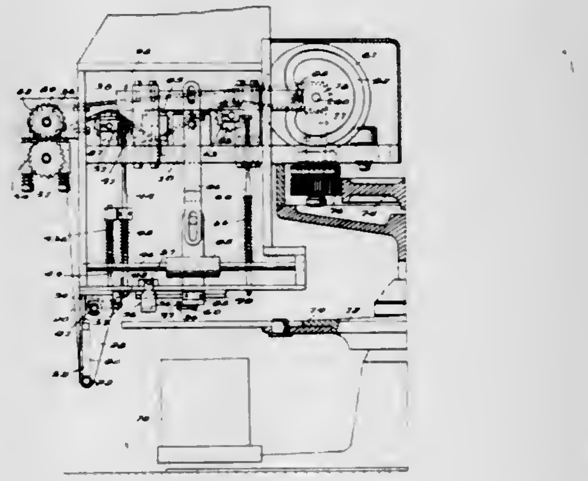
APPARATUS FOR FEEDING HEAT SHRINKABLE PLASTIC FILM AND CAPPING CONTAINERS THEREWITH

Thomas E. Marion, and Godfrey M. Priborsky, both of Baltimore, Md., assignors to Maryland Cup Corporation, Owings Mills, Md.

Filed Jan. 5, 1971, Ser. No. 103,984

Int. Cl. B65b *7/28*

U.S. Cl. 53—296 **9 Claims**



A feed mechanism is provided for a roll of sheet material, said material being shrink film for capping and closing the open end of a container. The feed of the film is directed downward from the roll and faked as it is unrolled around a tension rod freely mounted in vertical elongated openings formed in spaced brackets and holding the film suitably taut by the weight of the rod. Also, during pay-out of the film from around the freely mounted rod, a timer cam is rotated at the top of the machine to activate a pair of spaced clamps with gripping fingers to a clamping position of the free end of each corner of the film and to pull the film sheet a predetermined distance to cover the open top of a container to be capped and sealed. The clamps are normally spring closed, until one-way cam means momentarily open the same just prior to the clamping action on the film to receive edge portions of the film and then released to close over said film to pull the film sheet for the said predetermined pull distance. A linkage is timed by the timer drive cam and is operated to transversely cut the sheet into a portion with a sufficient marginal portion to overhang the open mouth of the container. The container is mounted on an elevator means to be elevated into a heat sealing area, so the marginal area is sealed by heat over the top of the container, whereupon when the elevator is lowered the capped container may be removed and the film feeding and capping repeated.

3,703,067

ROTATING CARTON FLAP MANIPULATOR

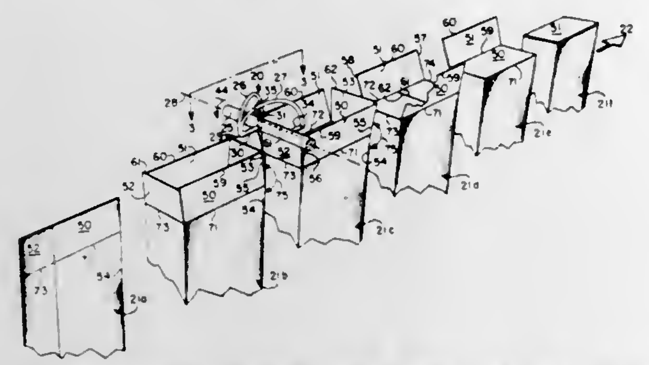
Calvin C. Goodrich, Wyoming, Ohio, and Eugene V. Krummen, Fort Mitchell, Ky., assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Oct. 6, 1970, Ser. No. 78,426

Int. Cl. B65b *7/20*

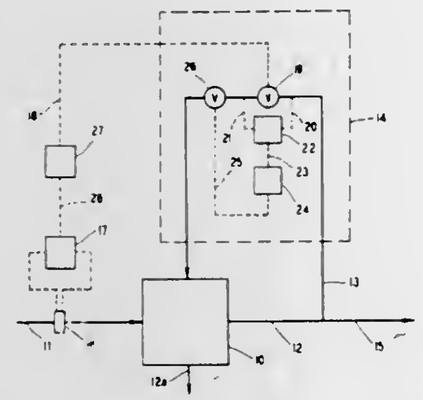
U.S. Cl. 53—374 **4 Claims**

A spirally configured carton flap manipulator is disclosed that is rotated in timed relation to columnarly advancing cartons having end closure forming flaps projecting substantially coplanarly with their respective carton sides. The rotating flap manipulator has its axis of rotation oriented generally transverse the direction of travel of the moving cartons and disposed outwardly from the projecting flaps. Its spiral camming element is adapted to impose a camming force on a flap having its proximal edge aligned parallel to the direction of carton movement without obstructing other carton flaps, whereby the aligned flap is rotated outwardly about its proximal edge.



3,703,068
CONTROL SYSTEM FOR SELECTIVE ADSORPTION PROCESS

John L. Wagner, Lackawanna, N.Y., assignor to Union Carbide Corporation
Continuation-in-part of Ser. No. 659,381, Aug. 9, 1967, Pat. No. 3,418,430. This application March 26, 1971, Ser. No. 128,591
Int. Cl. B01d *53/02*
U.S. Cl. 55—21 **21 Claims**

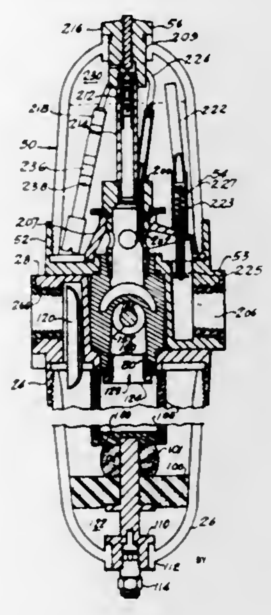


A pressure swing process for selective adsorption of feed gas components is controlled by maintaining a predetermined constant ratio of relative adsorption rate to repressurization product gas flow rate, and preferably cycling the adsorbent beds in response to termination of the repressurization step.

3,703,069
COMPRESSED AIR FILTER

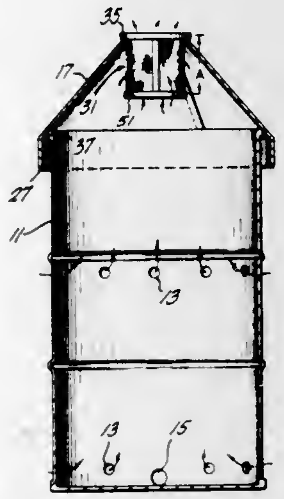
Harry L. Wheeler, Jr., c/o DK Pneumatics, Incs., 1090 Jefferson Street, N. W., P. O. Box 2427, Atlanta, Ga.
Division of Ser. No. 734,664, June 5, 1968, Pat. No. 3,559,764. This application Jan. 21, 1970, Ser. No. 8,117
Int. Cl. B01d *50/00*
U.S. Cl. 55—337 **8 Claims**

The air filter, the air regulator and the air lubricator, one or more of which are used in compressed air lines, such as those driving power tools, each having its own housing which may be selectively connected to one or more of the other housings to provide either a vertical or horizontal arrangement with respect to the air line axis with or without the use of fitting connections. The filter includes the metallic head containing inlet and outlet ports, a plastic chamber or bowl and a foraminous device therein to remove entrained impurities from the air and a collector to separate water from the air stream. The regulator includes a metallic casting with a valve means of controlling air flow responding to the diaphragm. The lubricator includes the metallic head containing inlet and outlet ports, a plastic chamber or bowl defining a reservoir and means to discharge oil vapor into the outlet port at a prescribed rate. By selective fitting of the housings together, communication is established through the inlets and outlets already provided therein and means is provided for securing the selected filter, or regular or lubricator together. The respective housings interlock and nest together in different relationships to fit into existing spaces or to save space.



3,703,070
INCINERATOR HOOD

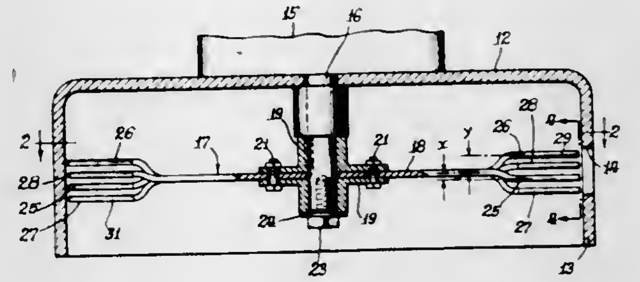
Paul G. Pasichnyk, 2617 Bedford Road, Lansing, Mich.
Filed June 10, 1970, Ser. No. 45,186
Int. Cl. B01d *35/12;* **F23j** *15/00*
U.S. Cl. 55—526 **3 Claims**



This invention relates to outdoor refuse burning containers and more particularly to such containers incorporating a hood for improved filtration of burned products, for ordinary outdoor refuse burning barrels. A conical hood for such a barrel is provided, the hood being disposed over the barrel in a lift-off relation; and having a combustion product discharging vent with a removable filter cartridge inserted therein. The cartridge is pervious to escape of the burn products and presents an extended cartridge length through which these incineration products must pass to escape from the chamber. The combustion products are forced to pass first through the walls of a generally cylindrical cartridge, formed of thin sheets of expanded metal, and then through the interior of the cartridge which comprises a second labyrinthine path constituted of strips of expanded metal stuffed into the interior of the cartridge.

3,703,071
ROTARY BLADE FOR MULCHING LAWN MOWER

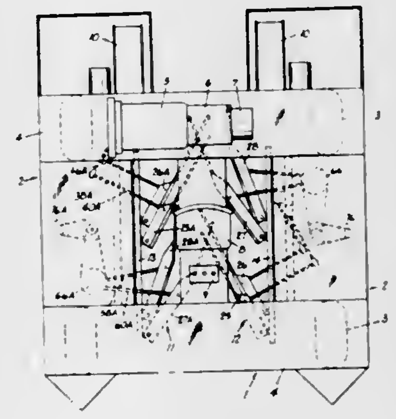
Charles I. Anderson, 7399 Main Street, Downers Grove, Ill.
Filed Feb. 17, 1972, Ser. No. 227,194
Int. Cl. A01d *55/18*
U.S. Cl. 56—295 **4 Claims**



Rotary blade for a power-driven lawn mower comprising an elongate body terminating at each end in a plurality of integral cutting fingers parallel to and displaced successively below and above the plane of the body with each finger defining a different plane and the upper surfaces of the leading edges of the fingers and the lower surfaces of their trailing edges chamfered to form cutting edges, whereby top-to-bottom reversal of the blade presents as leading cutting edges those that were trailing edges.

3,703,072
RASPBERRY HARVESTER

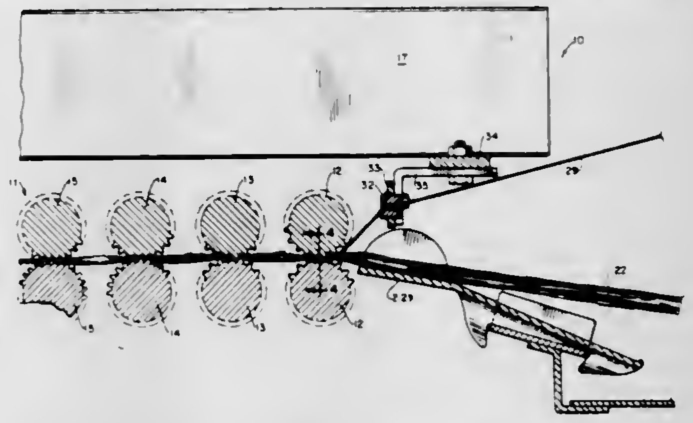
Albert W. Patzlaff, Holland, Mich., assignor to Blueberry Equipment, Inc., South Haven, Mich.
Filed Dec. 20, 1971, Ser. No. 209,602
Int. Cl. A01g *19/00*
U.S. Cl. 56—330 **13 Claims**



A mobile carriage has vertical bush engaging frames in opposed relation to engage opposite sides of the bushes as the carriage advances along a crop row. The frames are divided horizontally into upper and lower sections. The frames are further divided vertically into leading and trailing sections. The frame sections are vertically pivoted at their leading ends and have rearwardly extending vertically spaced flexible bush engaging rods. Each pair of opposed sections has one section that is spring biased inwardly toward the side of the bush, while the opposed section is vibratorily oscillated about its pivot to engage and shake the opposite side of the bush. The leading sections on one side of the machine are oscillated, while the trailing sections on the opposite side are oscillated. Separate and independent drive motor oscillate the driven frame sections on opposite sides of the machine; while the upper and lower driven frame sections can be oscillated in different and variable phase sequence.

3,703,073
ANTISTATIC YARN PRODUCTION

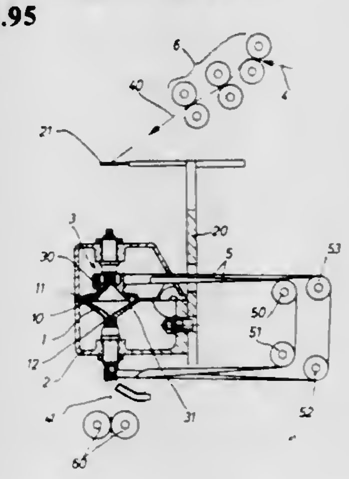
Reid C. Goodbar, and Arther Mitchell Pressley, both of Ware Shoals, S.C., assignors to Riegel Textile Corporation, Ware Shoals, S.C.
Filed Aug. 14, 1970, Ser. No. 63,755
Int. Cl. D01g *1/08;* **D01h** *5/72*
U.S. Cl. 57—36 **9 Claims**



There is disclosed a method and apparatus for producing yarn having discontinuous staple lengths of metal filaments uniformly interspersed therein by preventing slubbing of the metal multifilament tow during drawing thereof.

3,703,074
METHOD AND APPARATUS FOR SPINNING SLIVER

Stefan Staneff, Herzogenaurach, Germany, assignor to Industriewerk Schaeffler OHG, Herzogenaurach, Germany
Filed July 8, 1971, Ser. No. 160,742
Claims priority, application Germany, July 9, 1970, P 20 34 094.7
Int. Cl. D01h *1/12*
U.S. Cl. 57—58.95 **7 Claims**



Sliver is drafted immediately prior to its introduction into a supply passage to an open-end-spinning device, and the supply passage housing is rotatable to impart twist to the sliver so that the fibers in such sliver will be straightened and held in substantially parallel relationship until the sliver end is subjected to separation into individual fibers by the spinning apparatus. The inner mouth of the supply passage is located closely adjacent to the spinning chamber fiber collection face so that the fibers will be positively moved by the spinning forces, such as centrifugal, suction or electrostatic forces, to maintain the fibers in substantially parallel relationship, even though separated from the sliver in the spinning chamber. The sliver is gripped at the edge of the inner supply passage mouth to facilitate twisting of the sliver in the passage and to hold the sliver to facilitate separation of the individual fibers from the sliver end extending beyond the supply passage mouth in response to spinning forces. Such gripping may be effected simply by the configuration of the passage mouth which bends the sliver to frictionally engage the mouth edge, by roughening the mouth edge, or by providing a positive clamp glidably engaging the sliver.

3,703,075

METHOD OF MAKING A YARN CONTAINING LOOPS

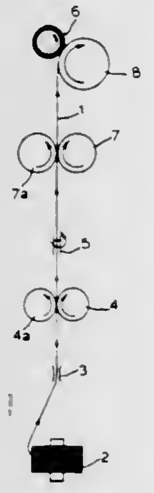
Otindra Nath Bose, Hollingworth, England, assignor to English Sewing Limited, Manchester, England

Filed Jan. 28, 1971, Ser. No. 110,464

Claims priority, application Great Britain, Feb. 7, 1970, 5,977/70

Int. Cl. D02g *1/02*

U.S. Cl. 57—157 R **8 Claims**



A textured yarn is made by continuously false untwisting and reverse twisting a previously twisted and heat set continuous multi-filament thermoplastic yarn and over-feeding the yarn so that the filaments thereof can form loops. The textured yarn so produced can be plied together and twisted and then again heat set to form sewing thread.

3,703,076

TWIN SHAFT GAS TURBINE ENGINE

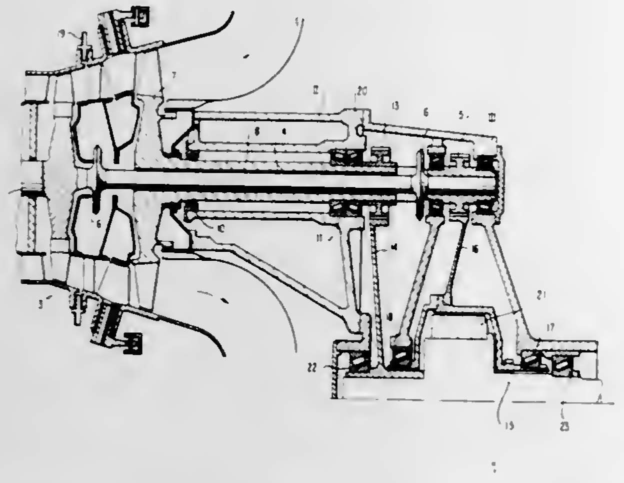
Klaus Hagemeister, Munich, Germany, assignor to Motoren-Und Turbinen-Union Muenchen GmbH, Munich, Germany

Filed June 5, 1970, Ser. No. 43,778

Claims priority, application Germany, June 6, 1969, P 19 28 660.3

Int. Cl. F02c *3/10*

U.S. Cl. 60—39.16 **21 Claims**



A twin-shaft gas turbine engine, which includes a gas generator with compressor and compressor turbine, a power turbine and a transmission, and in which, for purposes of braking operation, an intermediate shaft extends through the hollow power turbine output shaft to connect the rotor of the gas generator with the transmission; an engageable clutch associated with the intermediate shaft permits selective operation.

3,703,077

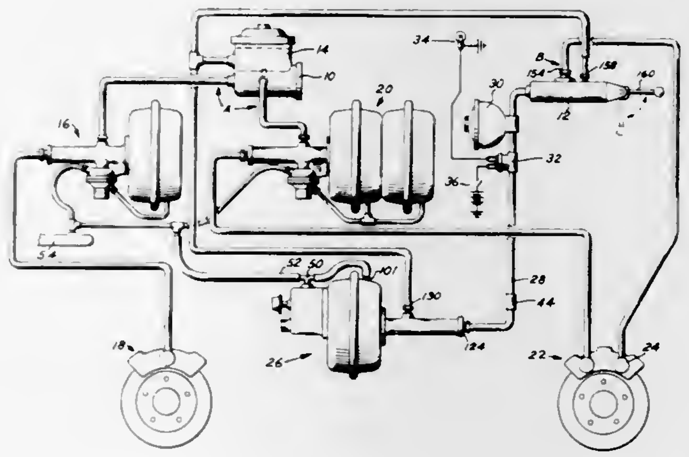
VACUUM PUMPING DEVICE

Maxwell L. Cripe, South Bend, Ind., assignor to The Bendix Corporation

Filed Nov. 23, 1970, Ser. No. 91,641

Int. Cl. F03b ; F01l *31/02;* **F16d** *65/24*

U.S. Cl. 60—51 **6 Claims**



A power braking system having a vacuum operated pumping device for supplying fluid under pressure to operate a spring braking device. The pumping device has a housing with an internal cavity divided by a wall member. Vacuum is maintained on one side of the wall member while vacuum and atmospheric pressure are alternately communicated to the other side. This alternate communication will create a pressure differential across the wall member causing the wall member to reciprocate in the cavity. A cylinder having an inlet connected to a reservoir and an outlet operatively connected to the spring braking device contains a piston attached to the wall member. As the wall member reciprocates, the piston will pressurize the fluid transmitted to the outlet. A check valve located in the conduit leading from the outlet will prevent any backflow pressure while permitting the pumping device to raise the pressure in an accumulator to a predetermined value. When this predetermined pressure in the accumulator is equal to the force required to move the piston, alternate communication of vacuum and atmospheric pressure to the rear will automatically cease. An inversion valve has an inlet connected to the accumulator for communicating fluid under pressure through a control port to operate the spring brake device. Upon actuation of the inversion valve by an operator, fluid flow through the inlet is inhibited and the pressurized fluid allowed to escape to the reservoir to thereby permit the spring brakes to be applied. A pressure indicator located in the conduit between the check valve and the inversion valve will transmit a signal to an indicator to alert the operator if a low pressure condition is present in this braking system.

3,703,078

RAPID RESPONSE FLUID DRIVE

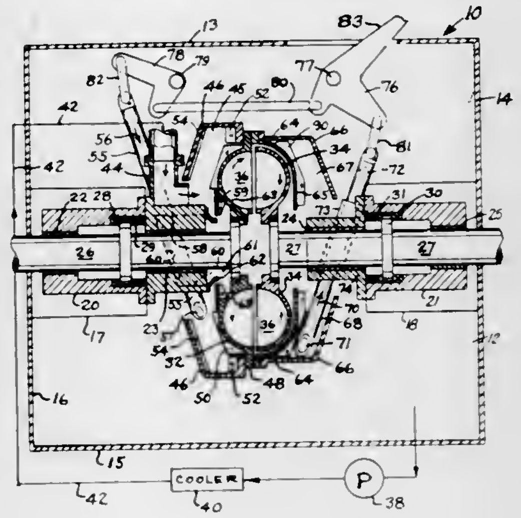
Richard M. Nelden, Southfield, and Thomas J. Ryan, Detroit, both of Mich., assignors to American Standard Inc., New York, N.Y.

Filed April 19, 1971, Ser. No. 134,949

Int. Cl. F16d *33/06*

U.S. Cl. 60—54 **9 Claims**

A fluid coupling equipped with means for admitting liquid to the work chamber at a variable rate for effecting quick output speed changes. The admitting means includes a rotating reservoir containing a reserve ring of liquid, and a scoop tube movable into the reservoir to extract liquid from the ring at a variable rate in accordance with the scoop tube position, and the replenishment rate for the reservoir.



3,703,079

HYDRAULIC ACTUATING SYSTEMS

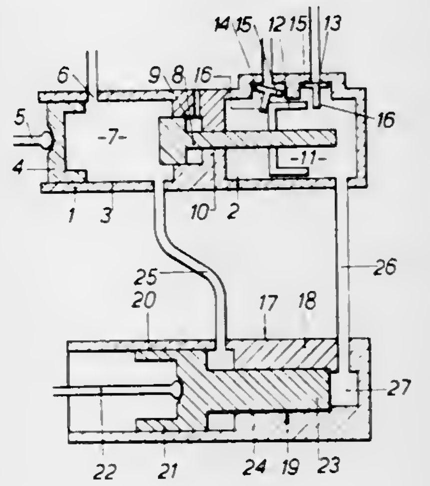
Brian Ingram, Balsall Common, and David Anthony Harries, Monkspath, Solihull, both of England, assignors to Girling Limited, Birmingham, England

Filed Sept. 11, 1970, Ser. No. 71,448

Claims priority, application Great Britain, Sept. 16, 1969, 45,562/69

Int. Cl. F15b *7/00*

U.S. Cl. 60—54.5 E **10 Claims**



In an hydraulic system, a slave cylinder for operating a control member, for example a clutch lever of a vehicle, is adapted to be actuated by the supply of hydraulic fluid under pressure from a pressure space of a pedal-operated master cylinder. A valve actuated in response to the fluid pressure supply from the master cylinder is adapted to control the supply of high pressure fluid from a high pressure source to a second slave cylinder.

3,703,080

HYBRID ROCKET PROPELLANT USING POLYMERIC SPONGE AND LIQUID OXIDIZER

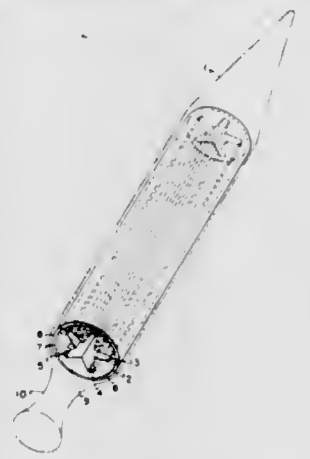
John P. Longwell, Scotch Plains, N.J., assignor to Esso Research and Engineering Company

Filed June 2, 1959, Ser. No. 817,970

Int. Cl. C06d *5/10*

U.S. Cl. 60—219 **10 Claims**

9. A method for developing thrust in a rocket combustion chamber by combusting a by-propellant which comprises igniting a rubbery sponge having cells and an intercellular matrix of cured solid polymeric substance and propellant fuel in said matrix mixed with the cured polymeric material, said cells containing a liquid oxidizing agent reactive with the fuel and the cured polymeric substance on ignition, said fuel and oxidizing agent composing at least 75 wt.% of the by-propellant.



3,703,081

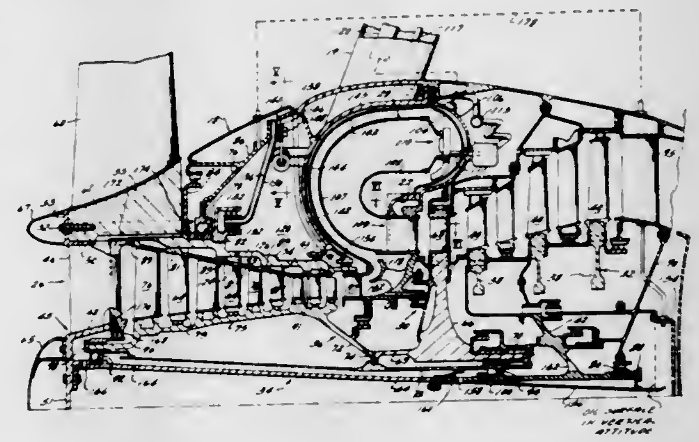
GAS TURBINE ENGINE

James N. Krebs, Marblehead, and Elmir E. Paulson, Topsfield, both of Mass., assignors to General Electric Company

Filed Nov. 20, 1970, Ser. No. 91,286

Int. Cl. F02k *3/06;* **F02c** *7/06*

U.S. Cl. 60—226 R **39 Claims**



The disclosure shows two gas turbine engines particularly suited to propulsion of V/STOL aircraft. The engines are characterized by a short axial length relative to diameter which is attributable to several features. These features include, singly and in combination, a toroidal combustion chamber having a reversely folded combustion zone, a bearing system for counter-rotating engine rotors, a shell construction for a counter-rotating compressor, and a lubrication system employing a rotor shaft as the pumping element. Other related features are also described.

3,703,082

APPARATUS FOR THE DETOXIFICATION OF EXHAUST GASES OF INTERNAL COMBUSTION ENGINES

Andres Santiago, and Enrique Santiago, both of Augsburg, Germany, assignors to Zeuna-Staerker KG, Augsburg, Germany

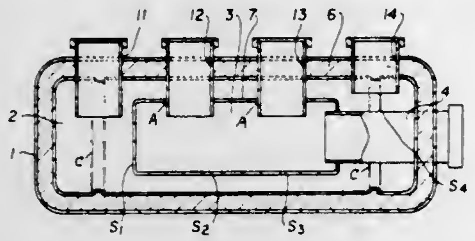
Filed Sept. 13, 1971, Ser. No. 179,758

Claims priority, application Germany, Sept. 16, 1971, P 20 45 658.0

Int. Cl. F01n *3/10;* **F02b** *75/10*

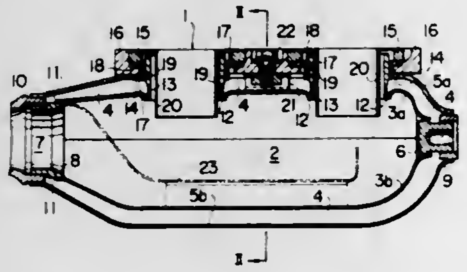
U.S. Cl. 60—282 **18 Claims**

An after burning device for an internal combustion engine has an inner combustion chamber totally enclosed in an outer, heat insulated combustion chamber. Some of the exhaust gas conduits form the engine exhaust directly into the outer chamber, while other exhaust gas conduits pass through the outer chamber and are exhausted into the inner chamber.



3,703,083
REACTOR

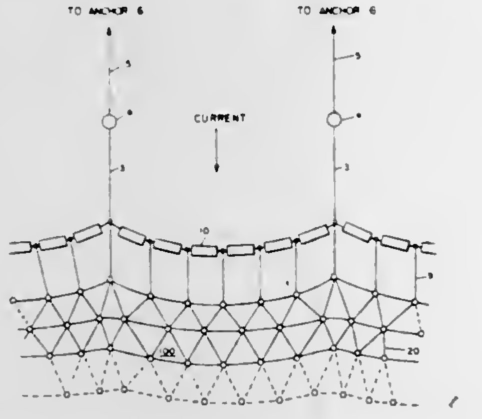
Tomoo Tadokoro, Kure, Japan, assignor to Toyo Kogyo Co., Ltd., Aki-gun, Hiroshima-ken, Japan
Filed Jan. 12, 1971, Ser. No. 105,864
Claims priority, application Japan, Jan. 14, 1970, 45/4110
Int. Cl. F01n *3/10*
U.S. Cl. 60—322 **9 Claims**



A reactor for purifying exhaust gas in an exhaust gas system of an internal combustion engine has an inner shell forming a reaction chamber and an outer shell surrounding the inner shell via an adiabatic space. Pipes define an inlet and an outlet and are perpendicular to each other. The inner shell is so supported on the outer shell that the inner shell may slide in an axial direction of one pipe while the other pipe is so constructed that the inner shell may move in an axial direction and in a direction normal to the axis of the other pipe. A member fixes the inner shell to the outer shell at any point for eliminating the vibration and noise of the inner shell.

3,703,084
BOOM SYSTEM FOR OIL CONTAINMENT

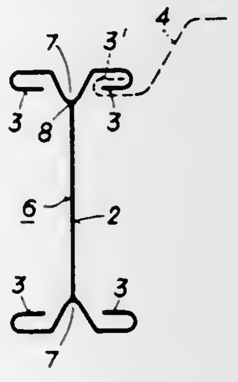
John B. Nugent, Winthrop, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Jan. 13, 1971, Ser. No. 106,225
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 F **2 Claims**



An improved boom system for the containment of oil spills on the surface of water, essentially comprising a multiplicity of intercoupling cells comprising floatatable material, open at top and bottom, forming an in-depth barrier that is wave conformal, the barrier being appropriately stabilized by weights and being coupled to a tether boom, which, in turn, is connected to moorings. Oil carried over the barrier face by waves is trapped in the cells as is oil carried under the barrier face by current flow.

3,703,085
SHEET PILE SECTION

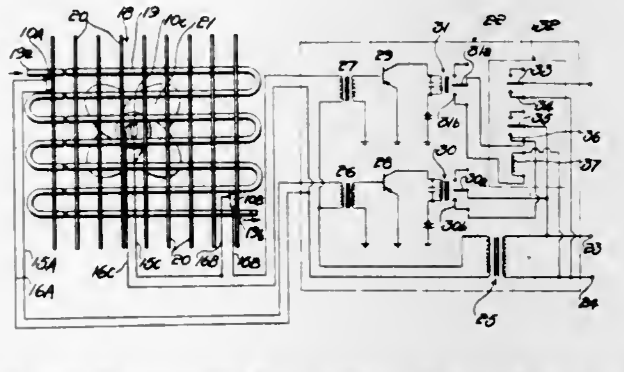
Alfred Wogerbauer, Linz, Austria, assignor to Vereinigte Osterreichische Eisenund Stahlwerke Aktiengesellschaft, Linz, Austria
Filed Feb. 26, 1971, Ser. No. 119,287
Claims priority, application Austria, March 4, 1970, 2002
Int. Cl. E02d *5/04, 5/08*
U.S. Cl. 61—60 **9 Claims**



The invention relates to a sheet pile section for erecting partly or continuously double-walled sheet piles comprising a web and two flanges welded to said web and projecting on either side of said web, each flange-end being designed as one half of a connecting lock for interlocking with an adjacent section, wherein the improvement resides in that the flanges are provided with the same wall thickness over their total extension and with hook-shaped ends which are formed by cold roll bending and bent back towards the web. This section, the web width of which may be freely chosen, is capable of absorbing great axial forces and bending moments. Also, it is capable of exercising high resistance moments with respect to its weight.

3,703,086
TEMPERATURE-REGULATING SYSTEM IN APPARATUSES FOR MAINTAINING TEMPERATURE CONSTANT

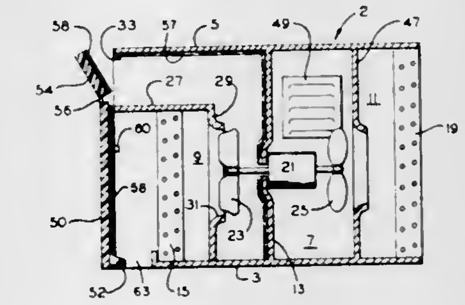
Kiyoichi Nijo, Osaka, Japan, assignor to Naniwa Sangyo Co., Ltd., Osaka, Japan
Filed Feb. 11, 1971, Ser. No. 114,534
Claims priority, application Japan, March 11, 1970, 45/21135; Aug. 5, 1970, 45/68904
Int. Cl. F25b *41/00*
U.S. Cl. 62—209 **6 Claims**



A temperature-regulating system in apparatuses for maintaining temperature constant such as domestic refrigerators, usual refrigerators, heating apparatuses for living rooms, air conditioning apparatuses or the like wherein a heat-exchanger regulating apparatus or machine is initiated and stopped differentially at the points of time when a first temperature-detecting device attached to a heat-exchanger detects a first predetermined temperature and when any one of a second temperature-detecting device provided outside said heat-exchanger detects a second or third predetermined temperature so as to maintain a desired constant temperature. Changes in the atmospheric temperature is compensated well owing to the presence of said third temperature-detecting device whereby said desired constant temperature is always maintained automatically.

3,703,087
SELF-CONTAINED AIR CONDITIONING UNIT

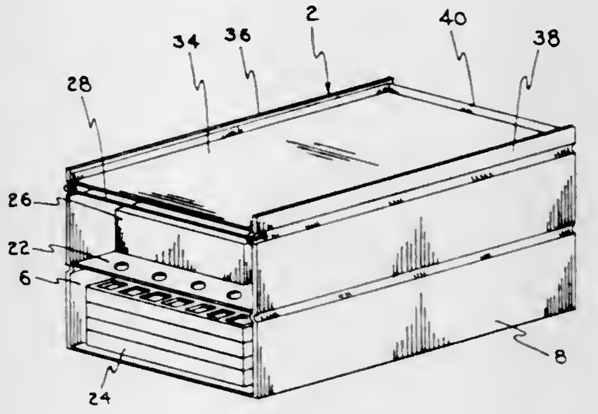
David E. MacLeod, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Sept. 8, 1971, Ser. No. 178,573
Int. Cl. F25d *23/12*
U.S. Cl. 62—262 **3 Claims**



A self-contained air conditioning unit having a first panel pivotally mounted on the unit casing opposite the evaporator and a second panel pivotally mounted on the first panel opposite the conditioned air discharge opening; the second panel is adapted for movement relative to the first panel to control the direction of air discharged from the unit, the first and second panels being adapted for pivotal movement relative to the casing for access to the interior of the casing for servicing the air conditioning unit.

3,703,088
CONTAINER FOR HANDLING CHILLED PRODUCT

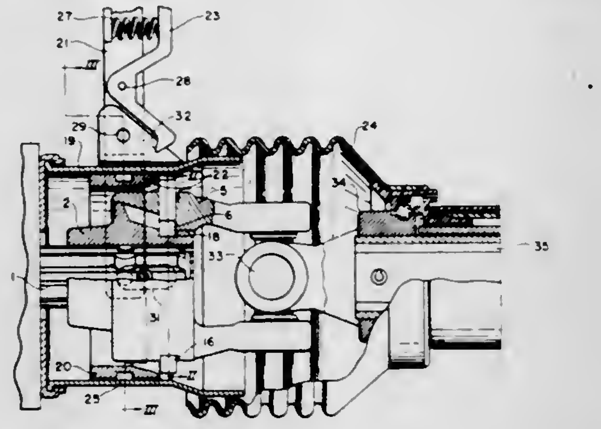
Glenn E. Moorhead, 3550 North Lakeshore Drive, Chicago, Ill.
Filed March 31, 1971, Ser. No. 129,753
Int. Cl. F25d *11/00*
U.S. Cl. 62—430 **10 Claims**



A combination refrigerated storage cabinet and dispensing plate for maintaining table fats, such as butter patties, at cold but spreadable temperatures over extended periods of time. The apparatus includes a refrigerant unit, a storage compartment, and an easy-access dispensing plate which enables rapid removal of individual servings of the refrigerated table fats.

3,703,089
DETACHABLE COUPLING DEVICE FOR TORQUE TRANSMITTING SHAFTS

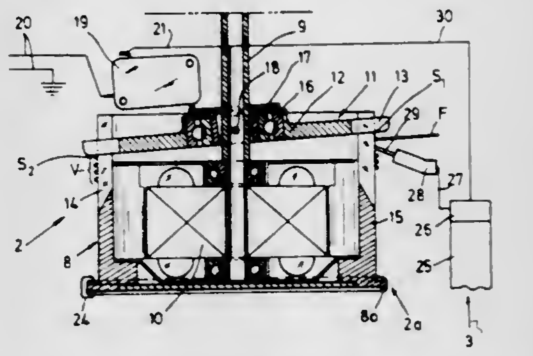
Hubert Geisthoff, Rheinl; Hans-Heinrich Welschof, Obertshausen, and Hubert Grosse-Entrup, Rheinl, all of Germany, assignors to Firma Jean Walterscheid K.G., Lohmar, Germany
Filed July 12, 1971, Ser. No. 161,501
Claims priority, application Germany, July 18, 1970, P 20 35 788.4
Int. Cl. F16d *3/32*
U.S. Cl. 64—32 R **7 Claims**



A coupling device comprises a conical coupling element on one shaft which is inserted into a tapered opening in the end of a yoke element extending from a universal joint connected to another shaft. The outer surface of the conical element has an annular groove in which are positioned two semi-circular blocking members pivotally mounted on the open end of the yoke element and having bent ends extending outwardly through openings in the yoke element. Spring means urge the blocking members inwardly into the groove to retain the coupling elements in driving relationship. A protective housing surrounding the conical coupling element has a lever pivotally mounted thereon which is operatively connected to a cylindrical slide element having an inner conical surface engageable with the projecting ends of the blocking members to release the blocking members from locking engagement with the conical coupling element.

3,703,090
COMBINED THREAD-FEEDING AND LUBRICATING DEVICE FOR KNITTING MACHINES

Karl Isac Joel Rosen, Villa Haga, Ulrichehamn, Sweden
Filed July 20, 1970, Ser. No. 56,385
Claims priority, application Germany, July 21, 1969, P 19 37 058.2
Int. Cl. D04b *15/48, 27/10*
U.S. Cl. 66—132 R **6 Claims**



A thread lubricating device for use with a knitting or other textile machine. Thread is withdrawn from a supply spool and fed tangentially onto a drum. Means are provided for moving said thread axially along said drum from one end thereof to the other. Lubricant is applied to the surface of said drum and absorbed therefrom by the thread. After leaving said drum, said thread is then conducted to appropriate utilizing means.

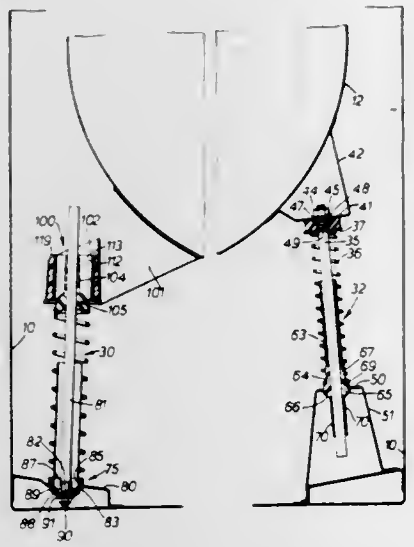
3,703,091
CENTRIFUGAL EXTRACTION MACHINES

Johathan Peter Steele, London, England, assignor to The Hoover Company, North Canton, Ohio

Filed March 18, 1971, Ser. No. 125,487

Int. Cl. D06f *23/02;* **F16f** *15/00*

U.S. Cl. 68—23.1 **17 Claims**



A centrifugal extraction machine is disclosed which incorporates a resiliently mounted assembly within which clothes are contained during washing. The assembly is supported by an outer casing entirely from below by a number of legs each incorporation a spring. There may be two or three such legs which may be connected to the casing or assembly by universal joints at one or other end. In at least one of the legs, the universal joint incorporates a friction damper bush split longitudinally of a supporting strut of the leg, and arranged so as to frictionally engage the leg and be forced thereagainst to cause frictional damping by compression of the spring during operation.

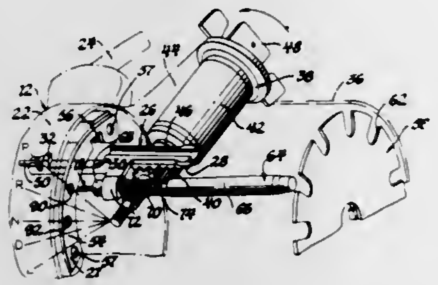
3,703,092
ENGINE STARTER AND POWER TRANSMISSION INTERLOCK SYSTEM

Harold V. Elliott, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed April 29, 1971, Ser. No. 138,481

Int. Cl. B60r *25/02, 25/06*

U.S. Cl. 70—248 **3 Claims**



An interlock system for preventing energization of a vehicle engine starting motor except when the power transmission of the vehicle is in a zero power transmission range, the interlock system including a transmission range selector movable between a plurality of positions corresponding to the ranges of the transmission, a control member operatively connected to the vehicle ignition switch and movable between a plurality of positions corresponding to the various operative configurations of the ignition switch, a probe attached to the control member for bodily movement as a unit therewith and for limited universal movement relative thereto, and a keeper supported on the range selector for unitary movement therewith and having an aperture therein for reception of the probe. When the transmission is in a power transmitting range, the keeper is disposed across the path of motion of the probe to arrest movement of the control member before the ignition switch energizes the engine starting motor and when the transmission is in a zero power transmission range, the aperture is aligned with the probe so that movement of the control member is unimpeded. The limited universal movement capability of the probe effectively prevents the development of friction between the keeper and the probe so that there is no tendency of the latter to bind or stick in the aperture.

3,703,093
PROCESS AND APPARATUS FOR PERFORMING A SIMULTANEOUS AND COMBINED PRESS-FORMING AND HEAT-TREATMENT OF STEEL STOCK

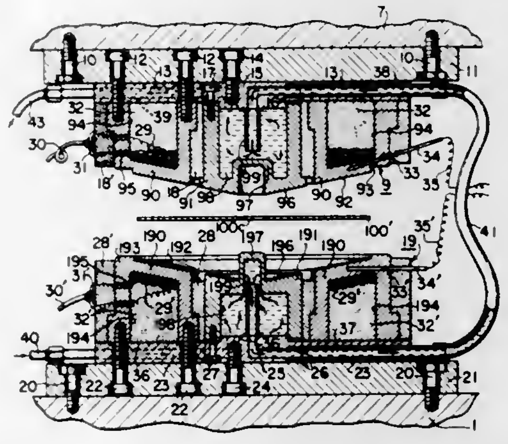
Noboru Komatsu; Takatoshi Suzuki; Takuo Ito, all of Nagoya; Yoshiteru Hara, and Kouichi Asakura, both of Kariya, all of Japan, assignors to Aisin Seiki Kabushika Kaisha, Kariya and Kabushiki Kaisha Toyota Chuo Kenkyusho, Hisakata, Showa-ku, Nagoya-shi, Aichi-ken, Japan

Filed Nov. 10, 1970, Ser. No. 88,352

Claims priority, application Japan, Nov. 11, 1969, 44/90597

Int. Cl. B21j *1/06*

U.S. Cl. 72—342 **4 Claims**



The invention relates to a process for press-forming and heat-treating a metallic stock for the manufacture of a specifically shaped product having locally different hardness distributions in specifically selected patterns.

The forming and heating are performed in a simultaneous operation of the die press machine, whereby the stock is deprived of different amounts of heat at different temperatures in specifically localized zones.

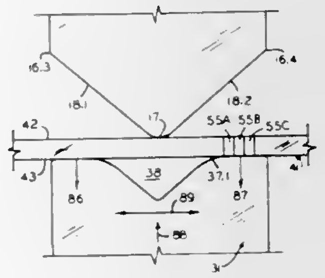
3,703,094
BRAKE PRESS DIE SYSTEM, STRUCTURE AND PROCESSES

George Benson Cree, Jr., 1912 Charles St., Pampa, Tex.

Filed June 24, 1971, Ser. No. 156,360

Int. Cl. B21d *37/10*

U.S. Cl. 72—389 **10 Claims**



Structures are provided each having a high modulus of resilience as well as improved metallurgical gradients and physical characteristics and resulting sufficient resilience to avoid damage by impact stresses, while sufficiently hard and mechanically stable to maintain their dimensional stability.

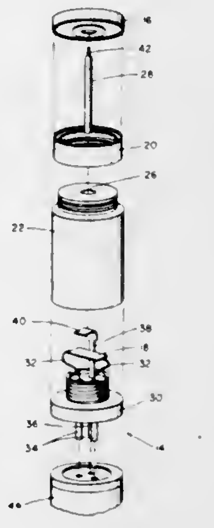
3,703,095
APPLANATION TONOMETER

Harry F. Holcomb, and Miguel Martinez, both of Baltimore, Md., assignors to The Johns Hopkins University

Filed March 10, 1970, Ser. No. 18,182

Int. Cl. A61b *3/16*

U.S. Cl. 73—80 **10 Claims**



An electric applanation type tonometer of the all solid state type is provided. A signal null indicative of a desired applanation triggers an electronic switch which takes a reading of a pressure signal. This pressure signal is stored and read out for several minutes after removal of the instrument from the eye.

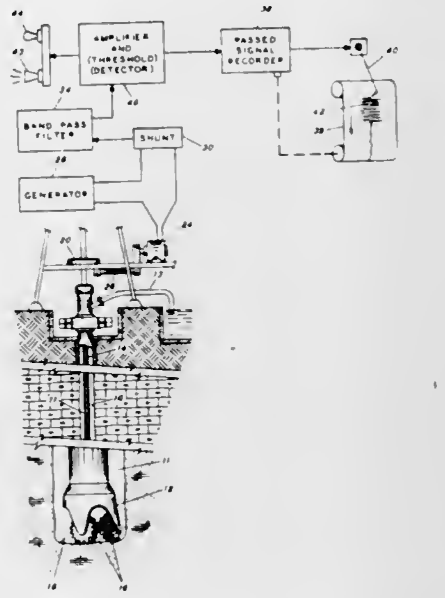
3,703,096
METHOD OF DETERMINING DOWNHOLE OCCURRENCES IN WELL DRILLING USING ROTARY TORQUE OSCILLATION MEASUREMENTS

Albert L. Vitter, Jr., New Orleans, and Hugh G. McDonald, Monroe, both of La., assignors to Chevron Research Company, San Francisco, Calif.

Filed Dec. 28, 1970, Ser. No. 101,739

Int. Cl. E21b *47/00*

U.S. Cl. 73—151 **10 Claims**



Method and apparatus are used to detect and measure oscillations of the rotary torque generated while well drilling, particularly oscillations of a frequency near the expected frequency of torsional oscillation of the drill string. The method and apparatus are particularly useful in indicating bit damage.

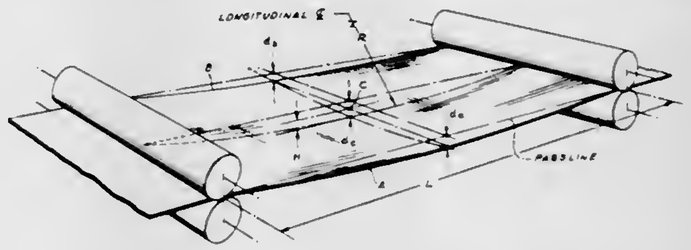
3,703,097
METHOD AND SYSTEM FOR MEASURING SHEET FLATNESS

Stanley A. Kilpatrich, Spokane, Wash., and Woodard A. Niethammer, Pleasanton, Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Dec. 24, 1970, Ser. No. 101,242

Int. Cl. G01l *33/20*

U.S. Cl. 73—159 **24 Claims**



A process for measuring sheet flatness comprising placing the sheet under sufficient longitudinal tension to remove substantially all internal compressive strains in the longitudinal direction and measuring the transverse profile of the sheet surface by suitable noncontacting proximity sensors and a system for such measurement.

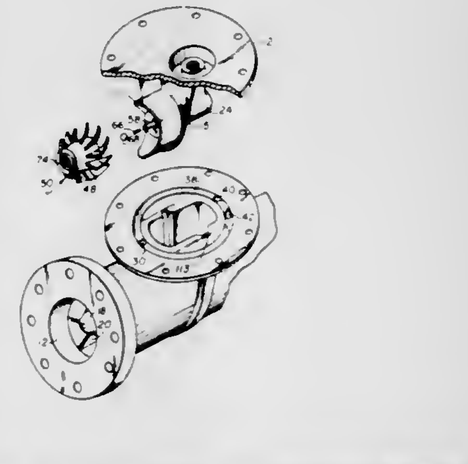
3,703,098
COMPOUND FLUID METER

Narinder Masson, 135 Montgomery Street, Jersey City, N.J.; William John Korenicki, 6 Mill Court, Linden, N.J., and Walter Ludwig Lechner, 21 Mee Lane, New Providence, N.J.

Filed May 10, 1971, Ser. No. 142,046

Int. Cl. G01f *1/00*

U.S. Cl. 73—231 R **1 Claim**



A compound fluid meter including a turbine type high flow metering device disposed in a main metering conduit, a low flow positive displacement metering device disposed in a bypass conduit connected to the main conduit, changeover valve means in said main conduit for preventing fluid flow therethrough when the fluid pressure is less than a predetermined pressure, the bypass conduit being adapted to receive fluid upstream from the valve means and reintroduced it downstream of the valve means, the turbine type high flow metering device comprising a fixed rod-like support member upon which an impeller is rotatably mounted, the rod-like support member having a free end extending towards the upstream end of the main conduit, a recess in said free end of the rod-like support member, a first thrust member loosely disposed in the recess and extending therefrom toward the upstream end of the main conduit, a ball-shaped thrust member, and a recess in the hub of the impeller shaped to receive at least the free end of the rod-like support member with the first thrust member extending therefrom and the ball-shaped thrust member disposed between the upstream end of the hub recess and the first thrust member. Holes may be provided in the impeller for introducing the fluid being metered into the hub recess to lubricate and cool the relatively rotating elements therein. Further, face polarized annular permanent magnets are provided for coupling the impeller to an intermediate gear train and the intermediate gear train to the gearing of a register box to permit the intermediate gear train to be disposed in a fluid tight casing. Still further, the changeover valve means may comprise a toggle link mounted valve member having a cam follower adapted to cooperate with a cam for guiding the valve member through its opening and closing movements

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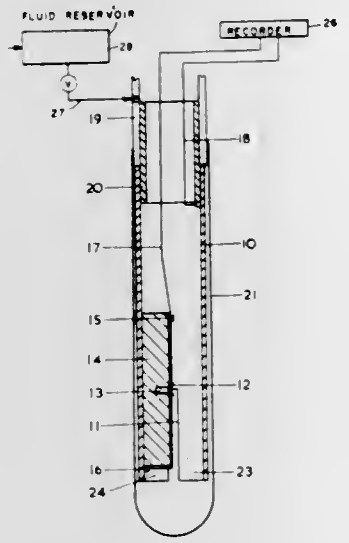
3,703,099
PRESSURE TRANSDUCER

William Rouse, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Oct. 23, 1970, Ser. No. 83,524
Claims priority, application Great Britain, Nov. 12, 1969, 53,408/69
Int. Cl. G01l *9/06*
U.S. Cl. 73—398 AR **6 Claims**

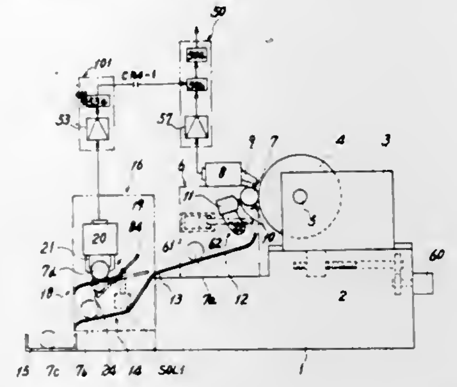


A pressure transducer including a pressure sensitive device having at least one part sensitive to a difference in pressure on each side thereof, a detector for detecting flexural strain induced in the sensitive part, and a distensible envelope providing a closure for and located adjacent to and unsecured to said pressure sensitive device. Fluid, especially gas, pressure is supplied to the interior of the envelope via fluid access means to distend and isolate the pressure sensitive device and render it unresponsive to any external pressure thus enabling a "zero reading" to be determined by equalizing the pressure on each side of said pressure sensitive device.

3,703,100
INSPECTING SYSTEM WITH A BRANCH CHUTE FOR SAMPLING FINISHED WORKPIECES

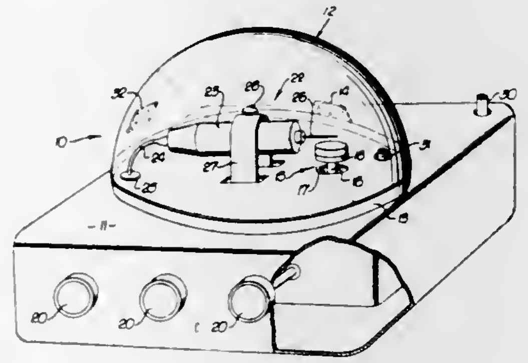
Makoto Kikuchi, Kariya, and Isao Suzuki, Okazaki, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan
Filed Aug. 13, 1971, Ser. No. 171,613
Claims priority, application Japan, Aug. 25, 1970, 45/74036
Int. Cl. G01n *1/02*
U.S. Cl. 73—423 **7 Claims**

In a post-process control system of gauging, a finished workpiece is led by a shutter from a delivery chute to an inspecting station placed in a branch chute each time a predetermined number of workpieces have been machined. At the inspecting station, the finished workpiece is clamped by a clamping device and in turn is measured by a sizing device for generating a compensating signal to adjust a signal unit of the in-process control system of gauging.



3,703,101
APPARATUS FOR SENSITIVE MEASUREMENT AND RECORDING OF PHYSIOLOGICAL ACTIVITY

Roy J. Pence, Los Angeles, Calif., assignor to The Regents of the University of California, Berkeley, Calif.
Filed Dec. 14, 1970, Ser. No. 97,617
Int. Cl. A61b *10/00*
U.S. Cl. 73—432 R **3 Claims**



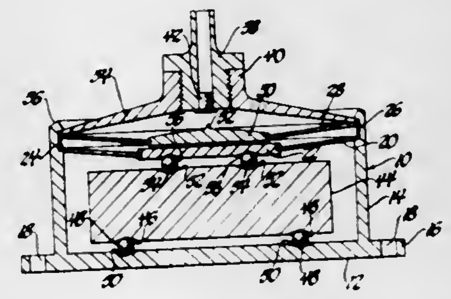
An apparatus for sensitive measurement and recording of the responses and activity in a biological specimen useful for the toxicological and pharmacological investigation of drugs, chemicals and gaseous environments. The apparatus includes an environmental chamber in which a biological specimen is stereotaxically mounted for positioning in selectable engagement with the probe of a piezoelectric transducer. The atmosphere within the chamber may be controlled to provide a particular gas within the chamber such as a contaminated or polluted air environment. The physiological activity or responses of a specimen to a selected gas or to manually administered drugs or chemicals are measured by the transducing device. The signal is then suitably amplified, filtered, processed and controlled to provide a visual or auditory recording of the processed signal.

3,703,102
MULTIDIRECTIONAL SENSOR

Otakar P. Prachar, Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 8, 1970, Ser. No. 70,319
Int. Cl. G01p *15/02*
U.S. Cl. 73—514 **3 Claims**

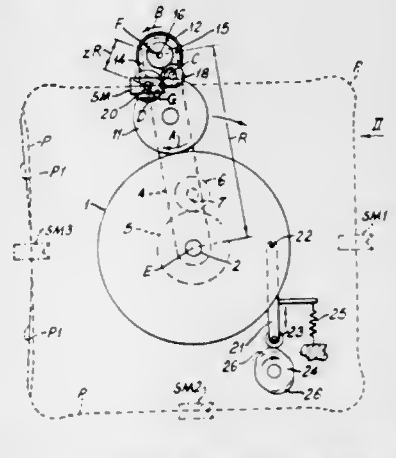
A cylindrical seismic mass includes three equally circumferentially spaced conical depressions in its lower end wall which receive and seat a first set of balls seating in like mating depressions in a plate supported on the lower wall of a cylindrical housing. The upper end wall of the mass contains three

equally circumferentially spaced conical depressions which seat a second set of balls also seating in an overlying first plate having like depressions mating with those of the mass. An overcenter disc spring supports the plate in engaged position with the second set of balls to in turn hold the mass in engagement with the first set of balls and locate the mass against movement laterally of the lower wall of the housing. An operator plate is supported adjacent the first plate by a disc spring in spaced relationship to a primer. When the mass receives an acceleration pulse of predetermined amplitude and time, it shifts generally parallel to the lower wall of the housing and the camming action of the first set of balls moves the mass axially or raises the mass. This movement of the mass and the camming action of the second set of balls axially shifts the first plate so that the disc spring thereof moves overcenter. The first plate then engages the operator plate to shift the operator plate axially so that the operator disc spring moves overcenter and the operator plate engages the primer. A modification includes a second plate supported by an overcenter disc spring between the first plate and operator plate.



3,703,103
MECHANISM FOR PRODUCING RECTILINEAR MOTION

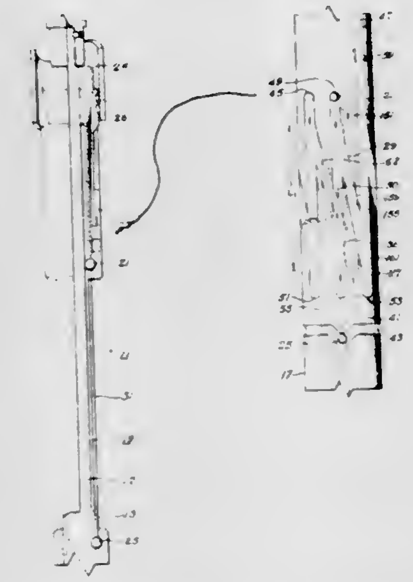
Robert William Davies, London, England, assignor to Molins Limited, London, England
Filed Feb. 4, 1971, Ser. No. 112,740
Claims priority, application Great Britain, Feb. 9, 1970, 6,033/70
Int. Cl. F16h *35/16*
U.S. Cl. 74—86 **4 Claims**



A mechanism for moving a support member in a substantially rectilinear polygonal path having *n* sides comprises a first sun gear engaged by a first planet gear, mounted on a first planet carrier which is rotated about the sun gear and also carries a second planet gear which engages the first planet gear; a second sun gear coaxial with the second planet gear is nonrotatably fixed to the first planet carrier; a second planet carrier, fixed to the second planet gear, and on which is rotatably mounted a third planet gear in engagement with the second sun gear and a fourth planet gear engaging the third planet gear, the support member being fixed to the fourth planet gear; the rectilinearity of the polygonal path is improved by rotating the first sun gear to and fro cyclically in synchronism with the rotation of the first planet carrier so that *n* cycles of movement of the first sun gear take place during each revolution of the first planet carrier.

3,703,104
POSITIONING APPARATUS EMPLOYING DRIVING AND DRIVEN SLOTS RELATIVE THREE BODY MOTION

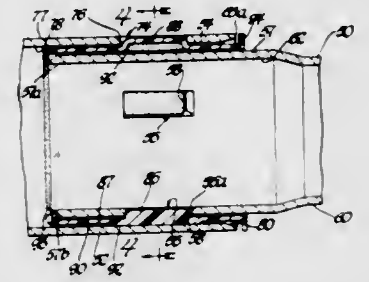
Jack W. Tamplen, Rural Route 2, Celina, Tex.
Filed Dec. 21, 1970, Ser. No. 99,763
Int. Cl. F16h *27/02*
U.S. Cl. 74—88 **19 Claims**



Positioning apparatus for effecting movement of a first body with respect to a second body in response to movement of a third body characterized by a slot traversal member engaging a set of driving slots and a set of driven slots that are formed respectively in the first and second bodies. One of the sets of driven and driving slots comprises a closed pattern of slots; and the other comprises a single slot having at least two portions that have the same design and are movable so as to be coextensive with the slots of the closed pattern of slots. Also disclosed are tubular and planar constructions employing the driving and driven slots.

3,703,105
COLLAPSIBLE SHIFT TUBE ASEMBLY

Thomas J. Milton, Bay City, and John W. Skelley, Saginaw, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 20, 1971, Ser. No. 173,411
Int. Cl. B62d *1/18*
U.S. Cl. 74—492 **3 Claims**

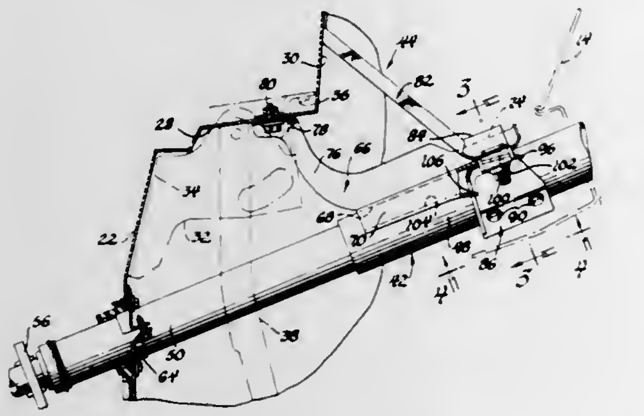


In a preferred form, this disclosure relates to a collapsible shift tube assembly having a cylindrical upper member, a cylindrical lower member, and a locking sleeve. The upper member which is received within the lower member has a plurality of circumferentially spaced slots in its lower end portion, and the lower member has a plurality of circumferentially spaced slots in its upper end portion. The sleeve is located intermediate of the upper and lower members and has radially inwardly and outwardly extending projections which are received within the slots of the upper and lower members to normally prevent relative angular movement therebetween. The joining means also has a radially extending flange means which is cooperable with the lower end of the upper member and the upper end of the lower member for normally preventing axially inward collapse of the shift tube assembly and which is shearable upon a predetermined axial load of the shift tube assembly to allow the shift tube assembly to collapse axially inward.

3,703,106
STEERING COLUMN ASSEMBLY

Gary L. Arntson, Lansing, and Tom Rasmussen, Okemos, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 20, 1971, Ser. No. 173,489
Int. Cl. B62d *1/18*
U.S. Cl. 74—492 **5 Claims**

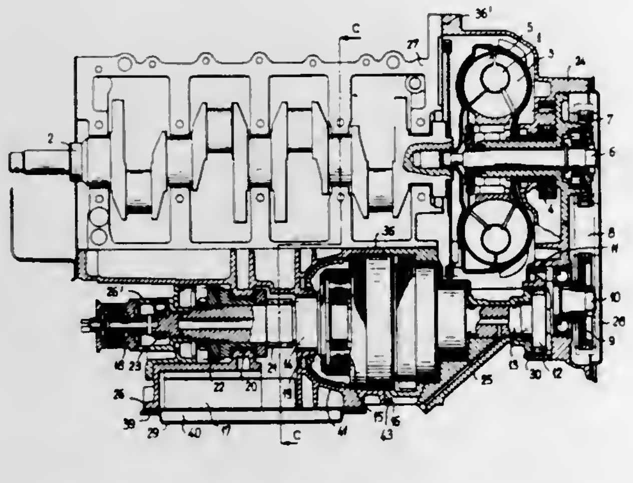


An energy absorbing steering column assembly for an automotive vehicle, the steering column assembly including a collapsible column structure and a combination support and guide member rigidly attached to the vehicle body remote from the instrument panel structure thereof and defining a channel of decreasing depth adapted to slidably receive a pair of lugs on a bracket rigidly attached to the column structure and axially movable therewith during energy absorbing collapse. During collapse of the column structure the bracket is constrained by the combination member to move in a path of motion effecting optimum performance while the lugs are progressively more tightly wedged in the combination member to effect supplementary energy absorption.

3,703,107
AUTOMOTIVE TRANSVERSE-MOUNTED POWER UNITS

Jean Piret, Billancourt, France, assignor to Regie National des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of France

Filed Jan. 22, 1971, Ser. No. 108,729
Claims priority, application France, Jan. 26, 1970, 7002586
Int. Cl. F16h *37/08, 57/02*
U.S. Cl. 74—695 **8 Claims**

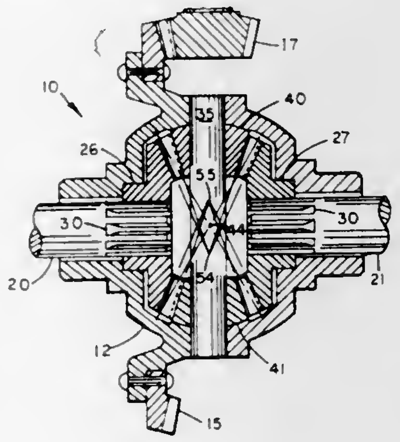


A power unit mounted across the longitudinal axis of a motor vehicle comprises a torque converter casing, a main transmission mechanism and differential gear casing connected to the power unit along orthogonal assembling planes and centered to one another by means of a cylindrical fitting. A detachable casing section assembled on the one hand to the main casing of the transmission mechanism along an assembling plane perpendicular to the assembling plane of the power unit crankcase and on the other hand to the torque converter casing is provided.

3,703,108
DIFFERENTIAL

Thomas M. McCaw, 2113 South 7th Street, Lafayette, Ind.

Continuation-in-part of Ser. No. 59,904, July 31, 1970, abandoned, which is a continuation-in-part of Ser. No. 816,741, April 16, 1969, abandoned. This application April 12, 1971, Ser. No. 133,195
Int. Cl. F16h *1/40, 55/04*
U.S. Cl. 74—713 **35 Claims**



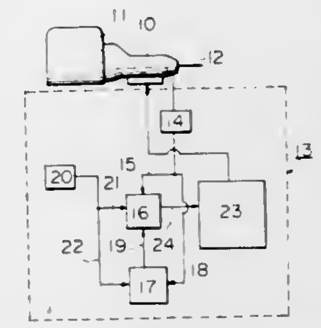
A torque proportioning differential is disclosed for use in a vehicle which enables distribution of torque to each drive wheel to match traction conditions at each wheel so that maximum available tractive effort to drive the vehicle is obtained. This is accomplished by the use of bevel gears for the pinions and side gears of either the straight, Zerol (Registered Trademark) or spiral type. These gears are formed so that the face cone apex does not coincide with the generated pitch cone apex. This construction produces a tooth contact between the pinions and side gears which travels from one end of the teeth to the other through each tooth mesh cycle. This contact condition accomplishes the torque proportioning. Also shown is modification of the face angles of the pinions and side gears to increase capacity of the device and to strengthen the ends of the teeth of the gears. This modification produces compound face structures a portion of which is defined by a cone having an apex which coincides with the generated pitch cone apex and another portion which is defined by a cone having an apex which does not coincide with the generated pitch cone apex. The disclosure also relates to the construction of the bevel gears.

3,703,109
ELECTRONIC CONTROL DEVICE FOR AUTOMATIC POWER TRANSMISSION MECHANISM

Namio Irie, and Masanori Mizote, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sept. 29, 1970, Ser. No. 76,458
Claims priority, application Japan, Oct. 1, 1969, 44/78362
Int. Cl. B60k *21/00;* **F16h** *47/00, 5/42*
U.S. Cl. 74—866 **4 Claims**

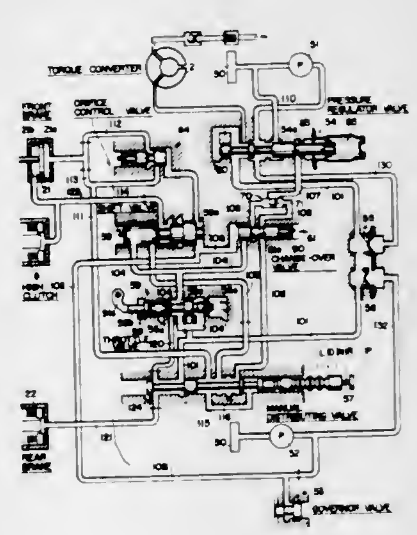
An electronic control device for an automatic power transmission mechanism that serves to effect smooth down shift by setting a neutral interval in accordance with vehicle speed and engine torque. In the control device, a first sensor electronically detects the vehicle speed and a second sensor detects the engine torque. A speed range indicating circuit receives output signals of the first and second sensors to generate a plurality of signals each indicating that the vehicle is running at a particular speed associated with the signal. A neutral interval adjustment circuit is provided to respond to the outputs of the first and second sensors and the plurality of speed range indicating signals so as to generate a pulse the width of which is equal to a proper neutral interval at the particular vehicle speed and engine torque. A command circuit is also provided to operate to hold the automatic power transmission mechanism in a neutral position for the duration of the pulse.



3,703,110
HYDRAULIC CONTROL SYSTEM FOR AN AUTOMATIC TRANSMISSION

Sumio Uozumi; Ichio Sakai, and Kiyoshi Ohnuma, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed Jan. 26, 1971, Ser. No. 109,786
Claims priority, application Japan, Jan. 28, 1970, 45/7629
Int. Cl. B60k *21/00;* **F16h** *3/74*
U.S. Cl. 74—868 **5 Claims**

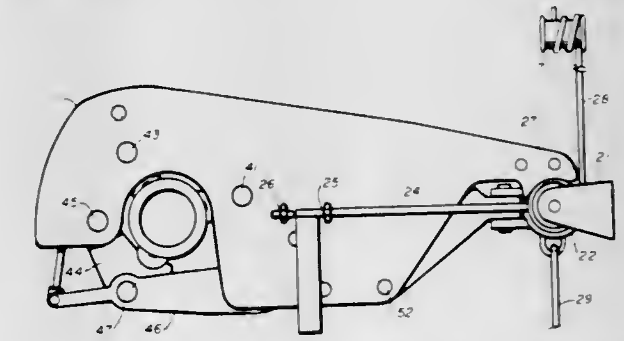


A hydraulic control system contains a hydraulic pressure source for producing hydraulic pressure supplied into the hydraulic servo mechanisms of a hydraulic automatic transmission, the hydraulic pressure is conveyed through a conduit system to a manual distributing valve which distributes the hydraulic pressure in accordance with its position in the various ranges "P", "R", "N", "D" and "L", a pressure regulator valve is located in the conduit system for establishing a line pressure by regulating the hydraulic pressure from the hydraulic pressure source, a governor valve in communication with a change-over valve and with a shift valve provides a governor pressure conforming to the vehicle speed, and a throttle valve is located in the conduit system for obtaining a throttle pressure conforming to the engine throttle opening. The shift valve supplies the line pressure to the required servo mechanism by comparing the governor pressure and the throttle pressure, and the change-over valve supplies the throttle pressure to the pressure regulator valve in accordance with the governor pressure. When the manual distributing valve is in the "R" range and the engine throttle opening is extremely small, the line pressure from the manual distributing valve is discharged and controlled in the throttle valve to take out a relatively low throttle pressure. When the throttle opening exceeds a predetermined value, the throttle valve takes out the line pressure from the pressure regulator valve as it is, thus obtaining a constant high throttle pressure. When the manual distributing valve is in the "D" range, the throttle pressure is applied to the pressure regulator valve through the change-over valve. When the throttle pressure is low, the line pressure of the pressure regulator valve is reduced, and when the throttle pressure is high, the line pressure thereof is increased. Furthermore, as the governor pressure is supplied to the change-over valve, the throttle pressure applied to the pressure regulator valve at a vehicle speed below a predetermined value, is shut off by means of the changeover valve, thus obtaining a constant low line pressure. Moreover, when the manual distributing valve is shifted from the "D" to the "L" range, this valve communicates the line pressure with the pressure regulator valve and, therefore, a high line pressure is produced by the pressure regulator valve, having no relationship with the vehicle speed and the engine throttle opening.

3,703,111
PIPE TONGS

William Guier, 3100 East 71st Street, Tulsa, Okla.

Filed Jan. 8, 1971, Ser. No. 104,865
Int. Cl. B25b *13/50*
U.S. Cl. 81—57.34 **7 Claims**

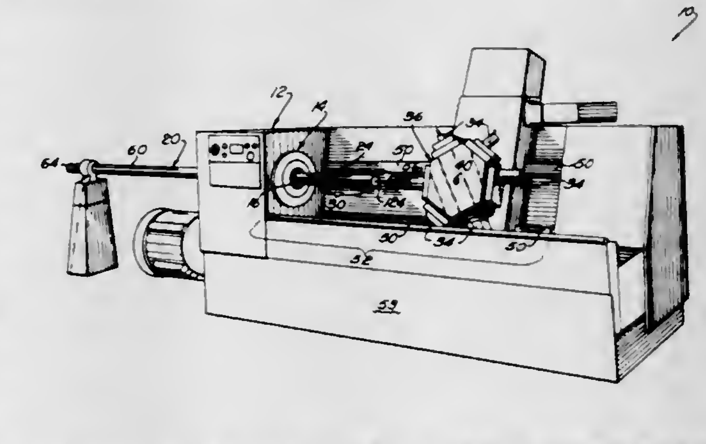


A pair of tongs are suspended above the rotary table of an oil well, their jaws aligned to grip pipe which is screwed together, or unscrewed, in sections. The jaws of the tongs are actuated by a fluid-powered mechanism to obviate manual manipulation. The tongs are mounted and arranged so they may be swung with the pipe sections and kelly between a rotary table and a mousehole.

3,703,112
MACHINE TOOL WITH BAR FEED CONTROL

Jack H. Selby, Chagrin Falls, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

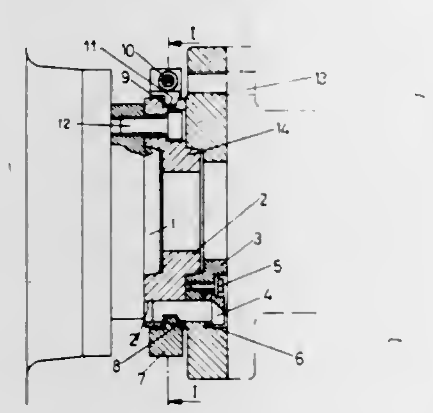
Filed June 11, 1970, Ser. No. 45,476
Int. Cl. B23b *13/02*
U.S. Cl. 82—2.5 **30 Claims**



An improved machine tool for operating on bar stock includes a chuck for holding the bar stock with a leading end portion extending toward a work station and a trailing end portion extending in a direction away from the work station. Bar stock is fed from the chuck to the work station by a gripper assembly which pulls the bar stock out of the chuck. As the bar stock is fed to the work station, a signal generator provides signals representative of changes in the length of the trailing end portion of bar stock. To insure that sufficient bar stock is left in the chuck for proper holding during operation of the machine in response to signals from the signal generator indicating that the trailing end portion of the bar stock is shorter than a predetermined length. The numerical control system is activated by a bar end detector when the trailing end surface of the bar stock is in a predetermined location and a known length of bar stock is available for feeding to the work station.

3,703,113
QUICK-CHANGE DEVICE FOR CLAMPING APPARATUS ON TURNING MACHINES

Armin Feisel, Schaffhausen, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland
Filed June 18, 1971, Ser. No. 154,478
Claims priority, application Switzerland, July 16, 1970, 10813/70
Int. Cl. B23b *19/02*
U.S. Cl. 82—30 **7 Claims**

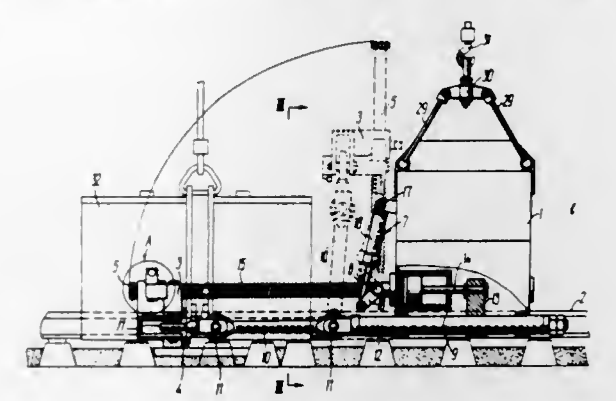


A quick change clamping device for mills, lathes or other turning machines in which a first clamping flange is fixedly attached to, or formed on, the hub of the machine, the first flange being provided with axially extending parallel holes. A second flange of annular configuration is provided with a plurality of axially extending clamping pins which are capable of gripping the second flange, extending into the holes of the first flange, and which are notched to receive a clamping ring. The clamping ring surrounds the first flange and extends inwardly therethrough. Angularly spaced openings permit the clamping pins to be inserted after which the clamping ring is rotated, operating against camming surfaces to pull the second plate firmly against the first, whereupon the clamping ring is tightened by one or more clamping bolts mounted therein. The apparatus is advantageous in that it can be operated rapidly and requires very little time and substantially no alignment for proper operation.

3,703,114
DEVICE FOR REMOVING FLASH FROM SEAMS OF BUTT-WELDED LONG-MEASURE ARTICLES

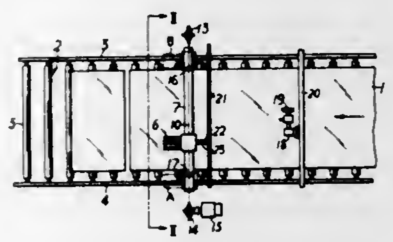
Yankel Meerovich Topopolsky, and Mark Aronovich Shikhman, both of Kiev, U.S.S.R., assignors to Vsesojuzny proekthno-konstruktorsky Institut svarochnogo proizvodstva, Kiev, U.S.S.R.
Filed Feb. 10, 1971, Ser. No. 114,117
Int. Cl. B26d *3/06*
U.S. Cl. 83—3 3 Claims

The claimed device for removing flash from the seams of butt-welded long-measure articles includes a casing carrying a head with opening cutters, said head being installed with a provision for being moved progressively by its drive on a lever one end of which is articulated at the base of the casing and connected with the drive which turns said lever in a vertical plane for bringing the lever with the head to a working position parallel to the article.



3,703,115
AUTOMATIC GLASS RIBBON CUTTING PROCESS AND APPARATUS

Yasuyuki Nagae, 40-12 Ohmino, and Nobuyuki Yamashita, 2095 Miyaziono-cho Sanban, both of Sakai, Japan
Filed Sept. 8, 1970, Ser. No. 70,214
Claims priority, application Japan, Sept. 10, 1969, 44/71271
Int. Cl. B26d *3/08*
U.S. Cl. 83—12 **10 Claims**

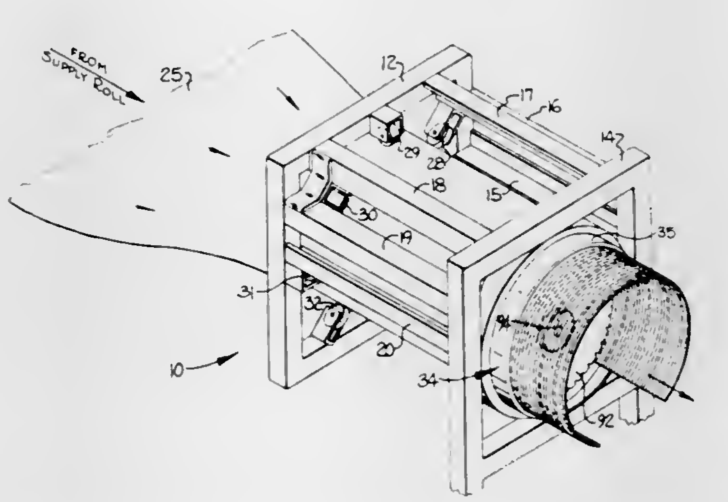


A process and apparatus for continuously cutting or scoring a moving glass ribbon in which a cutter mechanism having a cutter means mounted thereon for movement with and also transversely of said cutter mechanism is driven across said glass ribbon at substantially right angles to the ribbon from one position to the other position and simultaneously, said cutter means is driven in the same direction and at the same velocity as said glass ribbon, said cutter mechanism is retained in said other position while said cutter means is being driven in a direction opposite to said first-mentioned direction to its initial position and upon returning of said cutter means to said initial position said cutter mechanism is driven from said other position to said one position and simultaneously.

3,703,116
METHOD AND APPARATUS FOR SLITTING SHEET MATERIAL

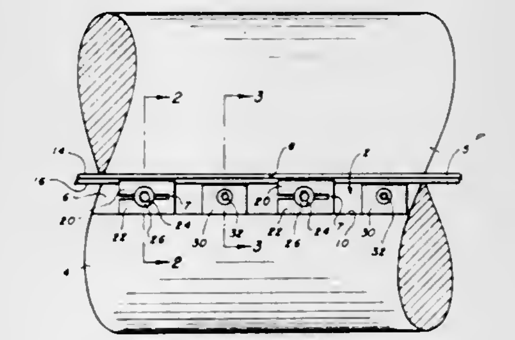
Brendan L. Doll, Patterson, N.C., assignor to Celin Products Company, Patterson, N.C.
Filed Dec. 1, 1970, Ser. No. 94,118
Int. Cl. B65h *17/20*
U.S. Cl. 83—17 **16 Claims**

A method and apparatus for slitting flexible sheet material of indeterminate length wherein the material is advanced along a predetermined path of travel to and past a slitting station, is formed into a transversely curved configuration as it is advanced, and is slit at the slitting station in a predetermined pattern of spaced, transversely extending rows of spaced slits with the slits in adjacent rows being in predetermined staggered relation. The apparatus includes a circular rotary knife and means for traversing the knife transversely of the curved sheet material. The periphery of the knife blade includes a plurality of spaced cutting edges adapted to penetrate the sheet material to form transverse rows of slits as the material is advanced through the apparatus.



3,703,117
ROTARY PAPER-CUTTER KNIFE STRUCTURE

Merton Louis Matthews, Westerly, R.I., assignor to Maxson Automatic Machinery Company, Westerly, R.I.
Filed Dec. 1, 1970, Ser. No. 93,978
Int. Cl. B23d *25/12*
U.S. Cl. 83—677 **6 Claims**

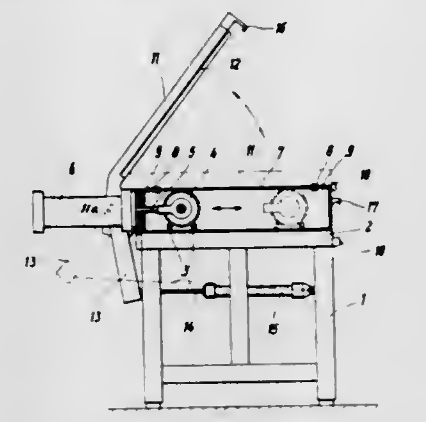


A rotary paper-cutter knife structure the knife blade of which is secured in a trough of a knife holder in the form of the revolver of a conventional paper-cutter machine. The knife is radially adjustable by means of a pusher having a ledge contacting the heel surface of the knife and having screw means extending therethrough and engaging the bottom surface of the trough. The knife blade is releasably clamped in the trough by means of wedges.

3,703,118
PUNCHING APPARATUS

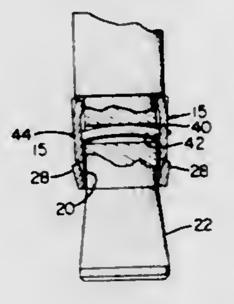
Ernst Maximilian Spengler, Heusenstamm near Offenbach am Main, Germany, assignor to Roeder & Spengler OHG, Bergen-Enkheim, Germany
Filed April 27, 1970, Ser. No. 32,294
Claims priority, application Germany, May 7, 1969, G 69 18 475.4; April 4, 1970, P 20 16 182.4
Int. Cl. B26d *5/08*; **B26f** *1/42*
U.S. Cl. 83—542 **6 Claims**

The present punching apparatus is a so called clicking machine for producing shapes out of sheet material by means of punching tools. A punching table made of bendable material is pressed toward the punching tools by a presser cylinder as the cylinder is moved in contact with and along one surface of the bendable punching table while pressure is exerted against the opposite punching table surface by counter presser means through said tools and through said sheet material to be punched.



3,703,119
EXPANSION BOLT

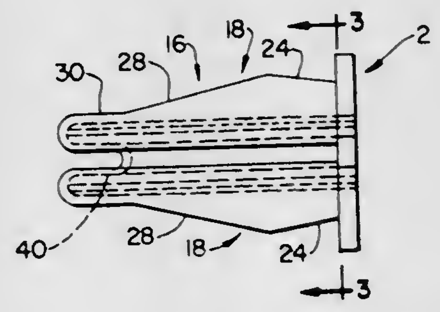
Lester Lerich, 1120 Birdie Place, Broomfield, Colo.
Division of Ser. No. 543,857, April 20, 1966, abandoned. This application Sept. 14, 1970, Ser. No. 72,087
Int. Cl. F16b *13/06*
U.S. Cl. 85—67 **5 Claims**



An expansion bolt of the type provided with collar-like wedge members disposed in an annular recess on the external surface of the bolt shank which are automatically movable into anchoring engagement with the wall of the bolt hole under the urging of a resilient insert extending transversely through the bolt shank behind the wedges in further cooperation with outwardly directed projections on the wedge members.

3,703,120
PLASTIC NUT DEVICE WITH IMPROVED SCREW SEALING AND INSULATING MEANS

Harold S. Van Buren, Jr., Lexington, Mass., assignor to TRW Inc., Cleveland, Ohio
Filed Oct. 22, 1970, Ser. No. 82,922
Int. Cl. F16b *13/04, 19/00*
U.S. Cl. 85—83 **6 Claims**



A one-piece plastic nut device having an integral web for effecting a seal about a screw turned into the nut.

3,703,121
CONTROL ELEMENT TO BE IGNITED ELECTRICALLY FOR PIN ENTRANCE

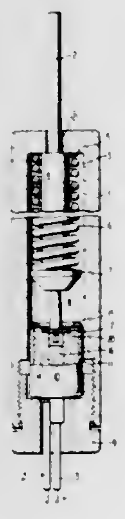
Heinz Gawlick, Furth; Hellmut Bendler, Erlange-Spardorf, and Gunter Hubsch, Kalchreuth, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Nov. 5, 1970, Ser. No. 87,112

Claims priority, application Germany, Nov. 5, 1969, P 19 55 703.0

Int. Cl. F42c *19/12*

U.S. Cl. 89—1 B **22 Claims**



A control element to be electrically ignited for pin retraction, wherein the pin is guided in a housing in which the electrical primer element is accommodated and is optionally provided with a delay device. In the starting position, a compression spring presses the pin with an integrally attached piston against the primer element. The piston rests on a supporting element of the primer element. After ignition of the primer element, the compression spring presses the pin with a residual force against the remaining portion of the supporting element which has been penetrated.

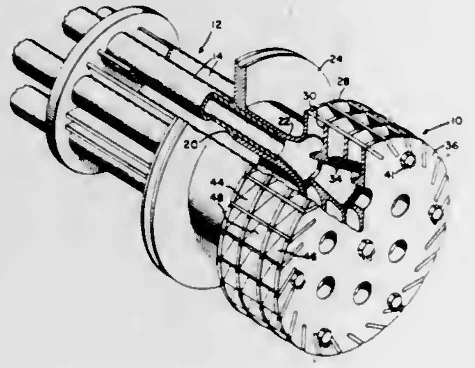
3,703,122
MUZZLE BRAKE TORQUE ASSIST FOR MULTI-BARREL WEAPONS

Dale A. Farrington, Winooski, and George E. Vandevord, South Burlington, both of Vt., assignors to General Electric Company

Filed Dec. 10, 1970, Ser. No. 96,681

Int. Cl. F41f *17/12*

U.S. Cl. 89—14 C **2 Claims**



A muzzle recoil brake has a plurality of gas deflection plates disposed downstream of the barrel muzzles for providing both a forward thrust and a rotary torque to the rotor from the gun gas exiting and expanding from the gun muzzles.

3,703,123
STAND FOR LIGHT FIREARMS

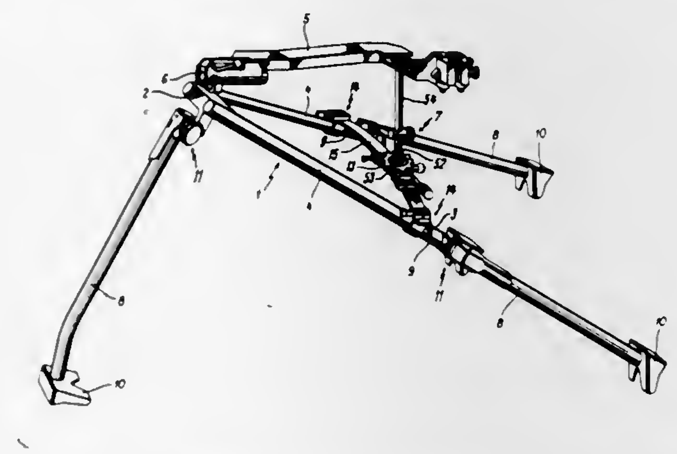
Kurt Horn, Oberndorf, Germany, assignor to Heckler & Koch GmbH, Oberndorf, Germany

Filed July 29, 1970, Ser. No. 59,057

Claims priority, application Germany, July 30, 1969, P 19 38 592.3

Int. Cl. F41f *21/04*

U.S. Cl. 89—40 E **15 Claims**



A stand for light firearms is substantially in the form of a tripod and includes a firearm support one end of which is connected to the stand by means of a universal joint, and the other end of which is pivotally connected to one end of a vertical strut the other end of which is supported by a device which is slidable and detainable on a horizontally disposed guide of the stand to permit lateral aiming adjustment of the firearm support, the strut comprising a screw-threaded spindle and a sleeve in which it is longitudinally displaceable for adjusting the effective length of the strut, the sleeve supporting a screw-threaded jaw which embraces the spindle by less than 180° and which is disengageable therefrom for coarse length adjustment, and the spindle being rotatable while in mesh with the jaw for fine length adjustment.

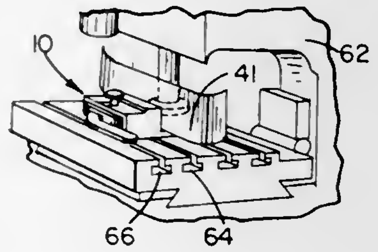
3,703,124
MACHINE TOOL GUARD AND/OR SAFETY SHIELD

William Smith, 6 North 654 Pine, R.R. 3, Bensenville, Ill., and Charles E. McGrath, 3552 West 115th Place, Chicago, Ill.

Filed June 7, 1971, Ser. No. 150,548

Int. Cl. B23c *9/00*

U.S. Cl. 90—11 R **11 Claims**



A machine tool guard and/or safety shield to protect the machine operator from flying chips, coolant liquids, such as oils, and other materials, and to provide protection from contact with the machine moving parts, wherein the device is readily attachable to a machine tool and is provided with a body having a slot for receiving a shield or protective guard removably secured thereto, and wherein the shield or guard is clamped by a plunger which is operated by a manual lever, and wherein the plunger is normally biased to retain the shield or guard, and wherein the plunger may be retracted by manual means to permit release of the guard or shield.

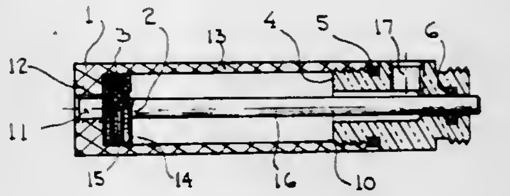
3,703,125
PLASTIC ACTUATING CYLINDER

Richard S. Pauliukonis, 6660 Greenbriar Drive, Cleveland, Ohio

Continuation of Ser. No. 883,152, Dec. 8, 1969, abandoned. This application Aug. 5, 1971, Ser. No. 169,532

Int. Cl. F01b *11/02, 31/00;* **F16j** *1/00*

U.S. Cl. 92—85 **3 Claims**



An all-plastic piston and cylinder assembly including an integrally molded end closure having a coaxial port therein and a threaded all-plastic closure member having a single annular groove and seal for the piston rod.

3,703,126
INTERNAL COMBUSTION ENGINE PISTON

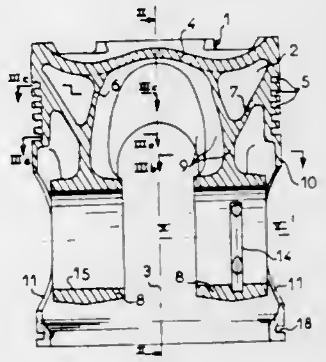
Albert Haug, Montmorency, France, assignor to Societe d'Etudes de Machines Thermiques, Saint-Denis, France

Filed Feb. 1, 1971, Ser. No. 111,308

Claims priority, application France, Feb. 16, 1970, 7005425

Int. Cl. F01b *31/08*

U.S. Cl. 92—186 **1 Claim**



Modular cast iron piston for an internal combustion engine, with oil cooling of at least the head and some of the piston ring grooves, and comprising an annular cooling chamber located in the piston head in proximity at least to the groove of the first piston ring and corresponding in configuration to said piston head and promoting the transmission of thrust forces directly to the boss forming the bearing of the connecting-rod small end.

3,703,127
RIGID BASE EARTH COMPACTOR

Benno Kaltenegger, Kurhausstr. 77-79, 5202 Hennel, Germany

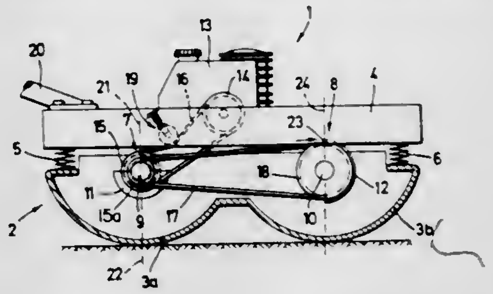
Filed Dec. 15, 1970, Ser. No. 98,328

Claims priority, application Germany, Jan. 17, 1970, P 20 01 987.8

Int. Cl. E01c *19/30*

U.S. Cl. 94—48 **21 Claims**

An earth compactor having a unitary base with downwardly facing convex surfaces. A first vibrator assembly is mounted generally centrally of one surface and a second vibrator assembly is mounted generally centrally of the second surface. Each assembly includes an eccentrically mounted weight. The weights are rotated at a speed ratio of 2:1 relative to each other and are initially positioned so both weights are up relative to the shafts on which they rotate. Such phasing of the weights provides an upwardly directed simultaneous unweighting action which facilitates steering and moving the machine by an operator. In one embodiment the weights have the same mass. The impacts exerted on the earth by this machine have a complex waveform, including a band of frequencies which provide for optimum compacting of earth of various particle sizes and consistencies. In a second embodiment the slower rotating weight has a greater mass than the faster rotating weight. In another embodiment, the portion of the base associated with the slower rotating heavier weight is heavier than the portion of the base associated with the lighter faster rotating weight.



3,703,128
VIBRATING ROLLER

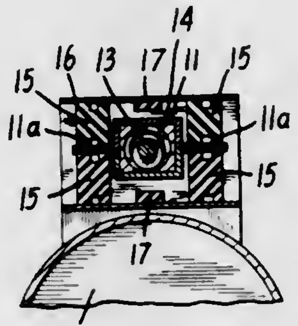
Johnny Fransson, Akersberga, Sweden, assignor to Aktiebolaget Vibro-Verken, Solna, Sweden

Filed Oct. 12, 1970, Ser. No. 79,824

Claims priority, application Sweden, Oct. 8, 1969, 13848

Int. Cl. E01c *19/28*

U.S. Cl. 94—50 V **17 Claims**



A vibrating roller mechanism that includes a roller drum and a vibrating device mounted on the drum to form a tuned two-mass system in resonance. This arrangement provides for a high amplitude of vibration of the roller drum with the use of a vibrating device of relatively small mass.

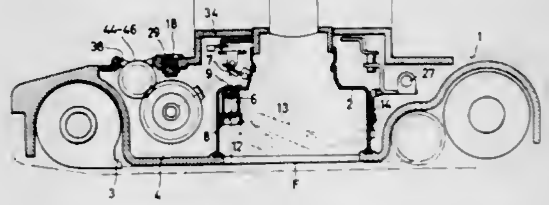
3,703,129
CAMERA PROVIDED WITH A RECORDING DEVICE FOR A PHOTOGRAPHED DATE

Takeshi Goshima, Tokyo, and Tooru Miyasaka, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed April 10, 1970, Ser. No. 27,285

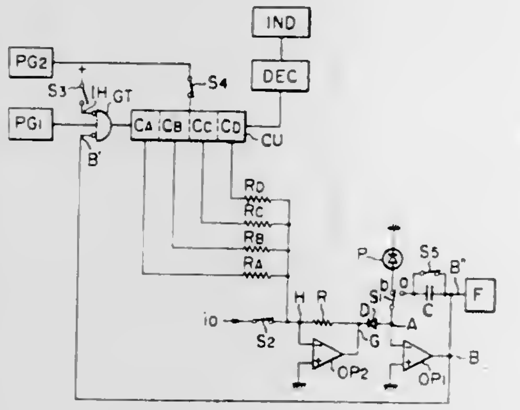
Int. Cl. G03b *17/24*

U.S. Cl. 95—1.1 **4 Claims**



A camera provided with a recording device for a photographed date, comprising an auxiliary optical lens system common to day, month and year for making an image of a date onto film overlapping on a part of a picture from an outer object, three rings for date preselection, a middle one of said rings being supported coaxially and slidably arround an inner one of said rings and supporting a remaining outer one of said rings coaxially and slidably around said middle one of said rings, each of said rings having a recording part for date and an inspection part and a member for manipulation from an outer face of a camera.

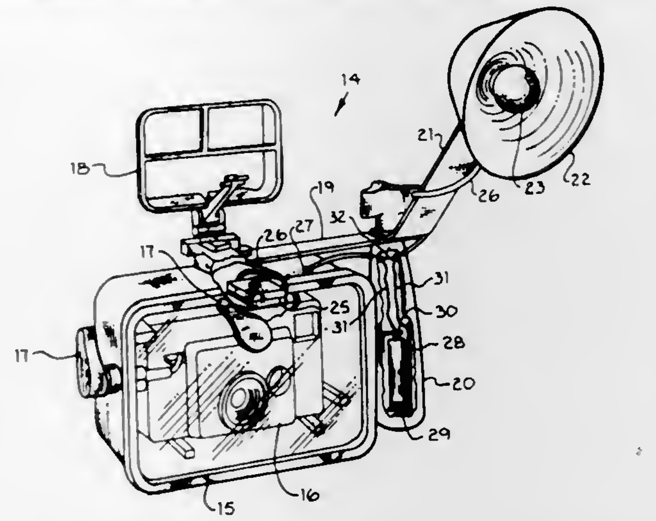
3,703,130
ELECTRONIC SHUTTER CONTROL DEVICE
Asao Watanabe, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed March 23, 1971, Ser. No. 127,288
Claims priority, application Japan, April 6, 1970, 45/29184
Int. Cl. G03b *7/08, 9/58;* **H03k** *17/00*
U.S. Cl. 95—10 CT **10 Claims**



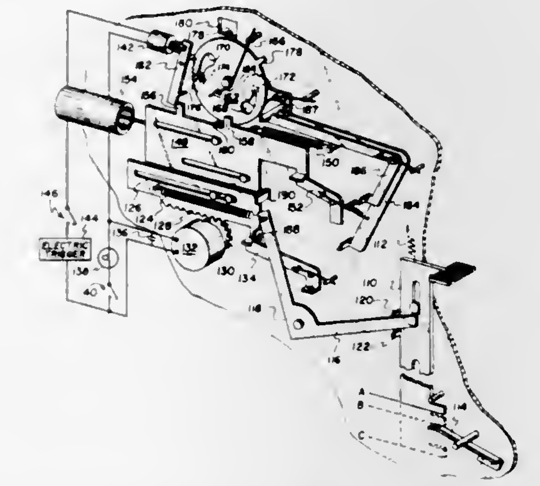
The electronic shutter device of this invention eliminates the prior art circuit which required extremely high insulation so as to hold the charge. In this invention, the current of photosensitive element proportional to the intensity of light of an object is converted into a voltage proportional to a logarithm of said current. Said voltage is compared with a voltage induced by a correction current for setting a film speed and a current of which magnitude being varied in response to a number of pulses counted by a binary counter. When the difference between these voltages reaches a predetermined value, the counter stops its counting. When the shutter is actuated a current proportional to an exponential of a voltage representative of the number of counting is integrated as the shutter is opened until the integrated value reaches a predetermined level at which time the shutter is closed.

3,703,131
CAMERA FLASH SWITCH ADAPTER
Owsley H. Brigham, 7510 Morningside Drive, Indianapolis, Ind.
Filed April 23, 1971, Ser. No. 136,966
Int. Cl. G03b *15/02, 15/04, 15/035*
U.S. Cl. 95—11 L **13 Claims**

A switch adapter for operably connecting a camera flash light to a camera having a batteryless flash cube receiver. A housing mountable to the camera receiver has a pair of electrical contacts mounted therein which are closable by the outwardly projecting flash actuator of the camera. A square configured element rotatably mounted to the housing abuts the depressible member of the receiver and is provided with a ridge to lockingly engage the receiver.



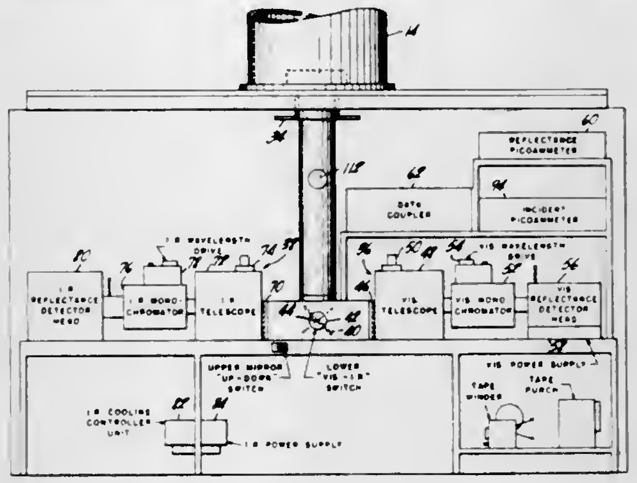
3,703,132
ELECTRIC GENERATOR DRIVE MECHANISM
David E. Beach, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 29, 1969, Ser. No. 861,916
Int. Cl. G03b *9/70*
U.S. Cl. 95—11.5 **5 Claims**



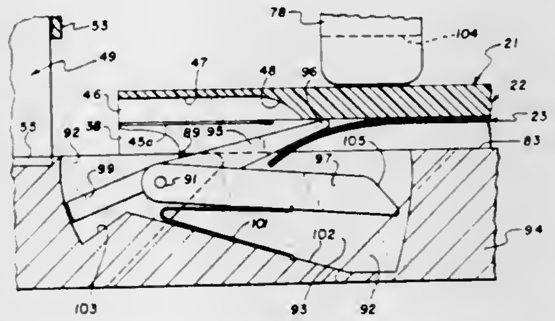
Device for driving the rotor of an electric generator which includes a spring biased drive member operatively connected to the generator rotor. The biasing spring is normally not effective to bias the drive member and is rendered effective during the process of setting the drive members in motion. The output of the generator may supply power to a camera flash lamp circuit and/or exposure control mechanism.

3,703,133
OBTAINING GROUND TRUTH FOR MULTISPECTRAL PHOTOGRAPHY
Edward F. Yost, Jr., Northport, N.Y., assignor to Spectral Data Corporation, Hicksville, N.Y.
Filed March 31, 1970, Ser. No. 24,172
Int. Cl. G03b *29/00*
U.S. Cl. 95—12.5 **12 Claims**

The ratio of the intensity of the radiation directionally reflected from a background or reference target in a selected portion of a spectral region extending from substantially 260 nanometers to substantially 3,000 nanometers or emitted by the target in a selected portion of a spectral region extending from substantially 3,000 nanometers to substantially 20,000 nanometers to the intensity of incident solar radiation at a point near the target is determined at intervals of 5 nanometers. Similar ratios are determined for a specimen of an anomalous target visually similar to the background target. Filters are selected for multispectral photography having maximum transparency in the bands where the ratios are different. Multispectral photographs employing such filters are optimally adapted to distinguish between the two types of targets.



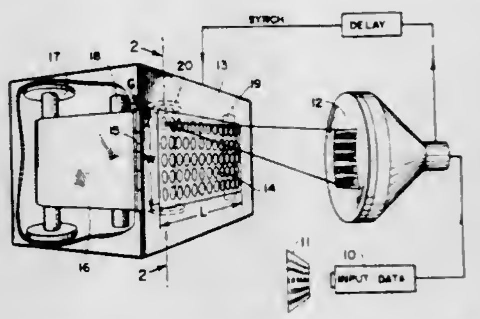
3,703,134
PRINT STRIPPING MECHANISM WITH SELF-ALIGNING STRIPPER FINGERS
Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed July 2, 1971, Ser. No. 159,324
Int. Cl. G03b *17/50*
U.S. Cl. 95—13 **13 Claims**



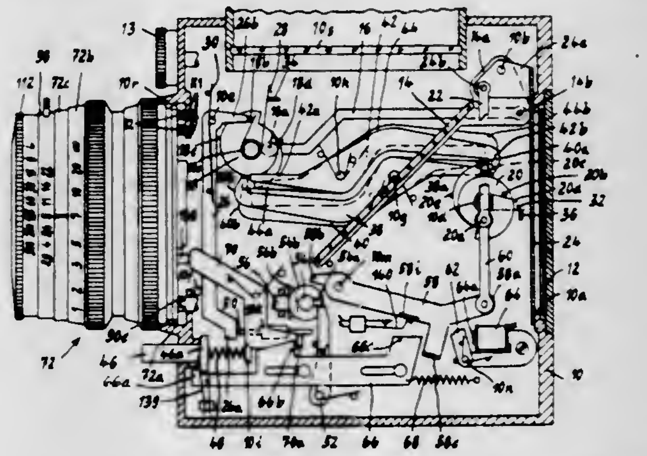
A processing camera for use with film units of a type including an image-recording element separably coupled to a generally rigid carrier or frame. Grooves in the frame confront the image-recording element and are adapted to receive pivotally mounted stripper fingers of the camera that separate the image-recording element from the frame as the latter is moved past the stripper fingers. The stripper fingers are provided with aligning members that engage reference surfaces on the frame to thereby establish proper alignment of the fingers relative to the frame and grooves immediately prior to entry of the fingers into the grooves.

3,703,135
MULTIPLE IMAGE FILM EXPOSURE AND PROJECTION SYSTEM
Paul Wentworth Lang, Westlake Village, Calif., assignor to Michael H. du Pont, Los Angeles, Calif., a part interest
Filed March 15, 1971, Ser. No. 124,010
Int. Cl. G03b *19/07*
U.S. Cl. 95—36 **1 Claim**

A plurality of individual image forming lenses provided in rows and columns in fixed relationship to each other is positioned front of a single film frame upon which rows and columns of small areas are to be exposed to different pictures such as a microfiche. Each lens has associated with it an individual shutter which is normally closed. Any one scene to be exposed to a given area on the film can be exposed by opening only the shutter associated with the corresponding lens positioned to project the scene on the particular area. Thus by sequentially opening and closing the various shutters as the scenes are changed, multiple images are formed on the main film frame in desired rows and columns without having to move the film itself or the camera. A reverse procedure is provided for reading out any one of the individual pictures formed on the film.



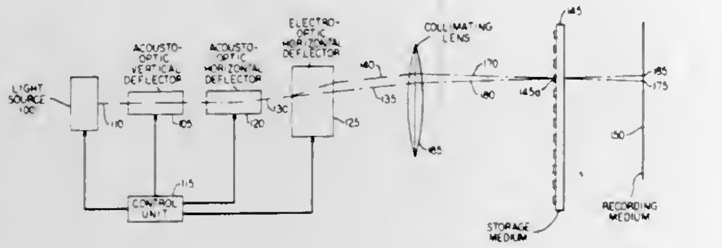
3,703,136
PHOTOGRAPHIC CAMERA WITH INTERCHANGEABLE OBJECTIVE SHUTTER
Gerhard Schwarz, Munich, Germany, assignor to Compur-Werk Gesellschaft mit beschrankter Haftung & Co., Munich, Germany
Filed Oct. 16, 1970, Ser. No. 81,324
Claims priority, application Germany, Oct. 22, 1969, P 19 53 229.7
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 **6 Claims**



A camera body, preferably of the single lens mirror reflex type, having provision for interchangeably receiving various objective shutter units, each unit containing its own individual shutter. The camera body is useful both with shutter units of older type in which the timing of the shutter is controlled mechanically, and with shutter units of newer type in which the shutter timing is controlled electronically. The body contains mechanism for synchronizing the movement of the movable parts within the camera body with the movement of the movable parts in the shutter unit, whether the shutter unit be of the mechanicallytimed type or of the electronically timed type.

3,703,137
HIGH-SPEED PRINTING APPARATUS
Lawrence K. Anderson, Stirling; Martin Feldman, Springfield, and Douglas Arthur Pinnow, Berkeley Heights, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed March 19, 1971, Ser. No. 125,948
Int. Cl. B41b *17/00, 17/08*
U.S. Cl. 95—4.5 R **7 Claims**

A high-speed printer includes a prerecorded multicharacter font stored in holographic form. Selection of a stored character for projection onto a recording medium is accomplished by means of a conventional X-Y acousto-optic deflection system. To achieve justified lines and attractively composed words, the printer must have a variable character- and word-spacing capability. This capability is realized by combining an electro-optic light deflector with the acousto-optic system in such a way as to controllably vary the angle at which an incident light beam interrogates a selected holographic character. For each different interrogation angle, the selected character is projected to a slightly different location along a row of the recording medium. In this way there is provided a vernier adjustment of the positions of characters to be printed.



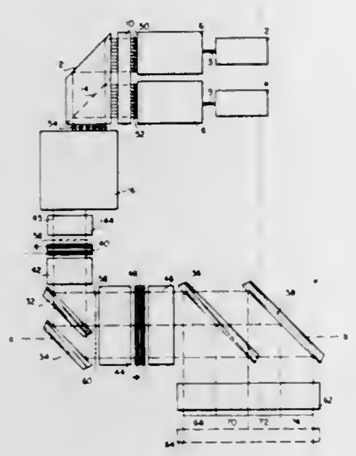
3,703,138
PHOTOCOMPOSING MACHINE

Louis M. Moyroud, c/o Photon, Inc., 355 Middlesex Avenue, Wilmington, Mass.

Continuation-in-part of Ser. Nos. 617,912, Feb. 23, 1967, Pat. No. 3,512,462, and Ser. No. 827,128, May 21, 1969. This application March 19, 1971, Ser. No. 126,111

Int. Cl. B41b *21/26*

U.S. Cl. 95—4.5 R **12 Claims**



A light-deflection system which is adapted to function as a photocomposing system is described. A laser light beam is deflected to any one of a group of locations along a character matrix array in order to illuminate a pre-selected character which is to be projected onto a light-sensitive surface such as a film. After selection, the character-bearing light beam is directed to a desired position on the film by a group of crystal deflectors in order to form lines of composition on the film. Also disclosed is a system for automatically positioning characters on a line after a point size change, a white space reduction circuit, "coarse" and "fine" character positioning or spacing, a light beam deflection system, and an embodiment of the optical leverage concept in which the character size-changing mechanism is positioned in the optical path between the character image deflection system and the film, so that the spacing of the characters relative to each other is not affected by a change in point size, since all provisions for character spacing are completed before the character images pass through the size-changing mechanism.

3,703,139
PRESSURE CONTROL SYSTEMS

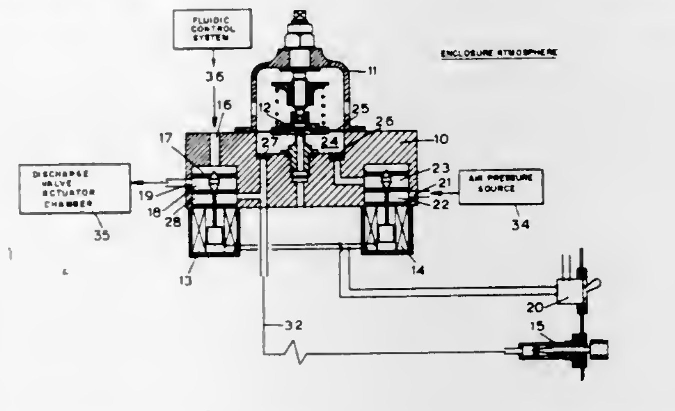
Owen Desmond Furlong, East Coker, England, assignor to Westland Aircraft Limited, Yeovil, Somerset, England

Filed Nov. 10, 1970, Ser. No. 88,402

Claims priority, application Great Britain, Dec. 9, 1969, 56,776/69

Int. Cl. B64d *13/04*

U.S. Cl. 98—1.5 **14 Claims**



A fluid pressure controller or emergency pressure controller comprises changeover valve means for substitution of the controller for normal control means and isolation thereof, pressure reducing means for regulating supply pressure through the controller to a pneumatically operable pressure varying means for an enclosure, and controllable valve means for controlling the output pressure from the controller. The controllable valve means may be a bleed valve, settable either manually or by a pressure capsule responsive to pressure in the enclosure. Preferably the normal control means is a fluidic pressure control system for the enclosure, and the fluid pressure controller functions as a selectively operable override controller during emergency conditions, such as upon malfunction of the normal control means.

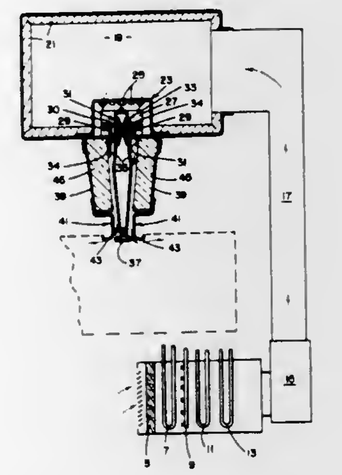
3,703,140
CEILING AIR TERMINAL

August W. Gutheim, Chittenango, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Jan. 20, 1971, Ser. No. 107,965

Int. Cl. F24f *13/06*

U.S. Cl. 98—40 D **1 Claim**



A ceiling air terminal including inflatable bladders that cooperate with cut-off plates to regulate the volume of treated air discharged from the terminal into the area being served. The cut-off plates have a first curved portion which defines the extremity of each plate closest to each inflatable bladder and a planar portion immediately adjacent to the curved portion. The planar portion is at an angle of substantially 5° relative to a vertical tangent line to the curved portion, the planar portion being inclined away from the inflatable bladder.

3,703,141
AIR VENT DEVICES FOR AIR CONDITIONING SYSTEMS

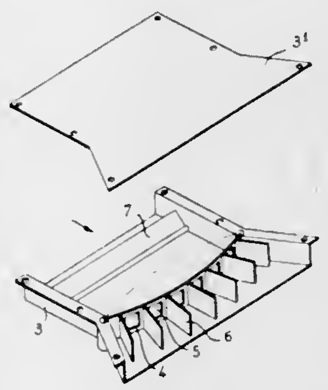
Claude Pernoud, Billancourt, France, assignor to Regie Nationale des Renault, Billancourt and Automobiles Peugeot, Paris, both of France

Filed Aug. 10, 1970, Ser. No. 62,505

Claims priority, application France, Aug. 19, 1969, 6928436

Int. Cl. F24f *13/08*

U.S. Cl. 98—121 **7 Claims**



An air vent device for use in any type of air conditioning systems, in particular that of a motor vehicle employing a stream of air, including a flexible blade mounted for deflection of the air stream, apertures therein through which the stream of air passes and a plurality of fins or tubular deflectors extending generally perpendicular to the blade. The combination is preferably formed as a single body of moulded plastic or of metal. The air vent can be adjusted to various positions for converging and diverging the stream of air, a given deflection producing a certain degree of divergence or convergence of the deflectors. Means for mounting the air vent includes freely and slidably mounting the ends with a guiding slot and pin arrangement therebetween, and freely mounting one end for movement and the other end for pivoting.

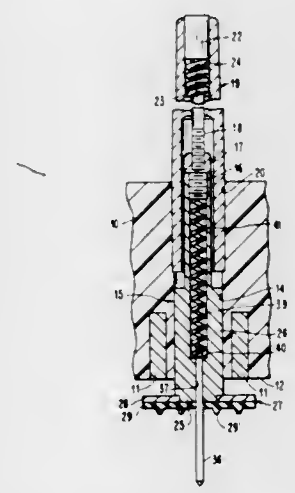
3,703,142
SELF-CENTERING MARKING DEVICE

Kenneth H. Mimlitch, 1029 Cross Keys Drive, Apt. 3, Lexington, Ky.

Filed Oct. 12, 1970, Ser. No. 80,004

Int. Cl. B41k *1/20*

U.S. Cl. 101—382 MV **2 Claims**



A marker, which prints a concentric element such as a nut, bolt, or the like, for example, when moved into engagement with a surface, is retained adjacent one end of a base by magnets within the base. The marker is carried on a protruding portion of a support, which is slidably mounted within the base and carries a locating pin extending longitudinally therefrom and through the marker. When the locating pin is disposed on the surface at the point at which the center of the nut or bolt is to be located, a spring, which acts on the locating pin, is overcome by depressing the base so that the marker can be moved into engagement with the surface at the desired location. After printing, the marker is released from the effect of the magnets by pushing the support away from the base whereby the field of the magnets is no longer effective so that the marker drops off of the support by gravity.

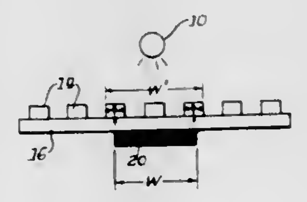
3,703,143
THERMAL TRANSFER SHEET AND METHOD OF THERMALLY TRANSFERRING IMAGES

Joseph Gaynor, Arcadia, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Feb. 16, 1970, Ser. No. 11,714

Int. Cl. B41m *5/00*

U.S. Cl. 101—470 **10 Claims**



This invention prevents an improved thermal transfer sheet and method of thermally transferring images. The transferability of images in a thermal transfer process is greatly improved by utilizing a thermal transfer sheet comprising a reticulated or discontinuous layer of transfer material.

3,703,144
DELAY COMPOSITION AND DEVICE

William H. Colburn, Jr., San Jose, Calif., assignor to Space Ordnance Systems, Inc., Saugus, Calif.

Filed Sept. 16, 1969, Ser. No. 858,475

Int. Cl. C06c *11/00*

U.S. Cl. 102—24 **11 Claims**

The disclosed embodiment of the present invention is a pyrotechnic mixture of a fuel and an oxidizing agent having a predetermined burning rate, thereby forming a delay composition. The fuel consists of zirconium and the oxidizing agent consists of molybdenum trioxide, both of which are in a finely divided form and in intimate admixture, and are present in proportions of about ⅓ to about 2 moles of molybdenum trioxide per mole of zirconium. This composition provides a time delay when employed in a train of pyrotechnic materials. One embodiment of such a train of materials includes a column of the delay composition positioned between corresponding ends of two deflagrating cords.

3,703,145
SELECTIVE ARMING MODE AND DETONATION OPTION ORDNANCE FUZE

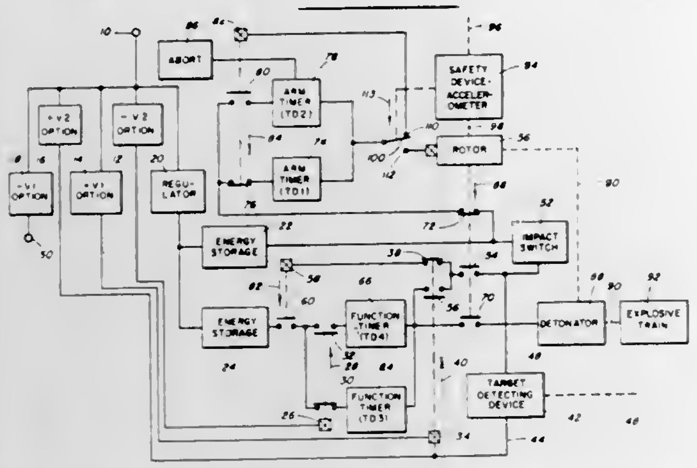
Lawrence E. Burkhardt, Burtonsville, and Charles H. Johnson, White Oak, both of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Dec. 5, 1969, Ser. No. 882,572

Int. Cl. F42c *11/06, 9/00, 15/40*

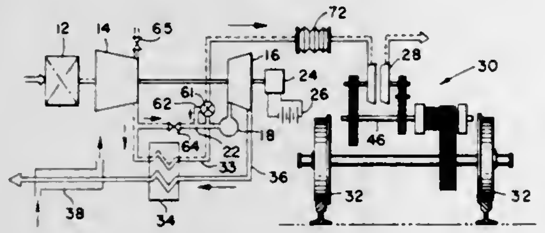
U.S. Cl. 102—70.2 R **7 Claims**

An ordnance fuze having a detonation option selection circuit, an arm circuit and a detonation circuit. The detonation options are selected by option circuits responsive to a particular voltage magnitude and polarity to provide output signals which actuate a plurality of switches to select an energy path to the detonator. The paths may include timing circuits to allow detonation of the fuze after the occurrence of a sensed condition. The condition may be sensed by an impact switch or by a target detecting device. The arm circuit includes time delays, a delivery mode sensing device, safety devices and switches to arm the fuze at a time dependent on the delivery mode of the fuze.



3,703,146
GAS TURBINE LOCOMOTIVE

Andre Kovats, 13 Baker Road, Livingston, N.J.
Filed March 17, 1971, Ser. No. 125,272
Int. Cl. B61c *5/02, 9/30;* **F02c** *3/10*
U.S. Cl. 105—61.5 **7 Claims**



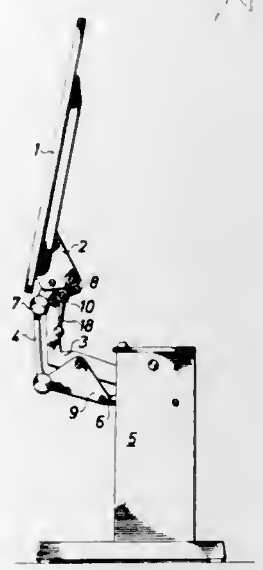
A gas-turbine power plant for locomotives, especially for lightweight turbotrains, comprising a pressure generating gas-turbine unit, which includes a compressor, combustor and a gas-turbine, in combination with an air-turbine, the latter driving the locomotive. The improvement of the present invention is that the compressor of the pressure generating unit, in addition to supplying air for the combustor and gas-turbine, also supplies air under pressure for the air-turbine, which air is first preheated by the exhaust gas from the gas-turbine in a heat exchanger. Preferably the air-turbine has first and second counter-rotating stages separately connected to the locomotive drive shaft through a pair of gear trains. The second stage of the air-turbine utilizes the momentum of the exhaust whirl of the first stage when, because of increased torque requirement, the locomotive accelerates or slows down. This provides the gas-turbine plant with high starting torque and high efficiency at normal operation.

The present invention is particularly useful for small turbotrains, or for locomotives requiring two gas-turbine power plants of about 1,000 HP to 1,600 HP each.

3,703,147
LOCKING MECHANISM FOR VERTICALLY ADJUSTABLE DRAWING BOARDS

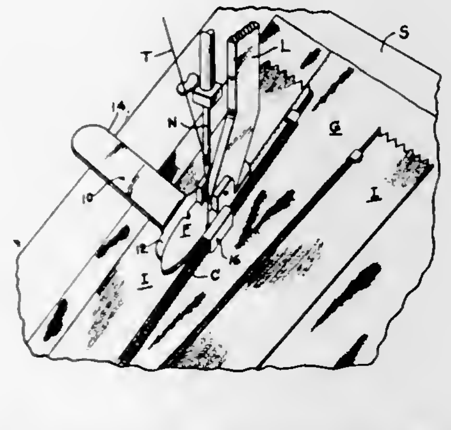
Bror Olle Herbert Selander, Malmo, Sweden, assignor to AB Spacio System, Malmo, Sweden
Filed April 27, 1971, Ser. No. 137,793
Claims priority, application Sweden, April 27, 1970, 5829/70
Int. Cl. A47d *9/00*
U.S. Cl. 108—145 **3 Claims**

A parallel motion guiding mechanism supporting a drawing board and including two opposite levers is provided with a link between the levers pivotally connected with one of the levers and connected with the other lever for rotational movement and displacement longitudinally of the link. A locking mechanism is provided to optionally lock the link to said other lever in order to prevent a change of the mutual spacing of the levers and thereby to prevent movement of the parallel motion guiding mechanism.



3,703,148
GUIDE FOR SEWING INVISIBLE FASTENERS

Walter Thomas Ackermann, Watertown, and Thomas Joseph Daley, Woodbury, both of Conn., assignors to Scovill Manufacturing Company, Waterbury, Conn.
Filed Aug. 13, 1971, Ser. No. 171,467
Int. Cl. D05b *29/12, 35/06*
U.S. Cl. 112—150 **5 Claims**

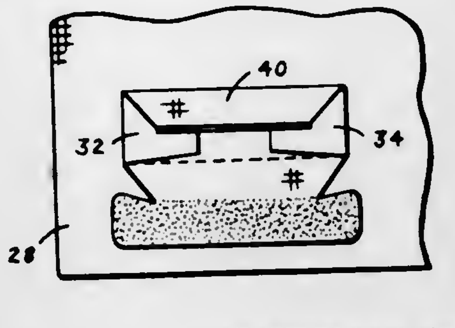


A guide for sewing invisible zippers onto fabric may be adhesively secured to underside of presser foot of sewing machine. Guide is integral piece of sheet material and includes manipulating tab.

3,703,149
PRE-MADE BUTTONHOLE FINISH, A NEW TYPE OF BOUND BUTTONHOLE

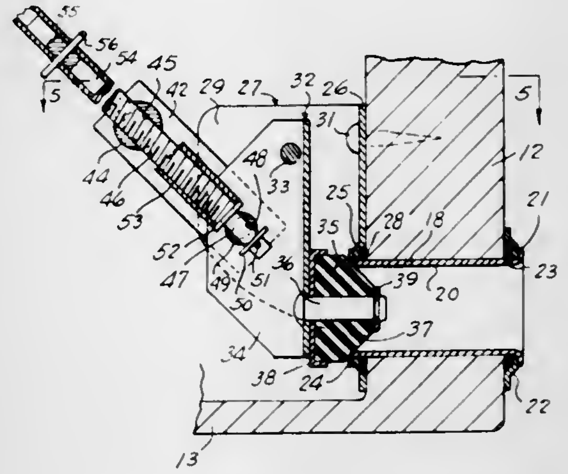
Barbara George, 333 101st Street, Brooklyn, N.Y.
Filed Nov. 9, 1970, Ser. No. 87,894
Int. Cl. A44b *17/00*
U.S. Cl. 112—264 **3 Claims**

The pre-made buttonhole finish is a piece of fabric that is cut in a specific form with an iron-on adhesive along the edges of one side of the fabric, and a sewing guide line marked near the center of it forming a one piece buttonhole binding. This application is then sewn on the desired place of a finished garment; then after cutting the garment along the slit in the center of the pre-made buttonhole finish the two side edges are folded towards the center and ironed on. The top and bottom edges then folded towards the center, tucked into the slit, pulled out from the back of the garment and then ironed on flat in place forming the bound buttonhole therein.



3,703,150
MARINE BAILER

Axel Moeller, St. Petersburg Beach, Fla., assignor to Moeller Mfg. Co., Inc., Greenville, Miss.
Filed June 26, 1970, Ser. No. 50,220
Int. Cl. B63b *13/00*
U.S. Cl. 114—197 **6 Claims**



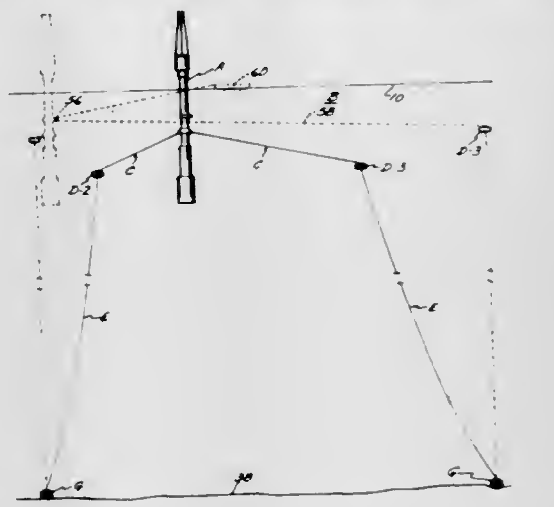
A remote control boat drainage valve assembly consisting of a thimble extending through an opening at the stern of a boat with a bracket secured in the stern having a pivoted arm carrying a plug engageable in the thimble. An elongated operating stem extends threadedly through a yoke carried by the bracket and is rotatably connected to the arm for moving the plug relative to the thimble by rotating the stem.

3,703,151
BIASED TAUT LINE MOORING SYSTEM

John C. Clement, Cypress, Calif., assignor to Ocean Design Engineering Corporation, Long Beach, Calif.
Continuation of Ser. No. 778,388, Nov. 25, 1968, abandoned. This application Sept. 4, 1970, Ser. No. 69,954
Int. Cl. B63b *21/00, 21/52*
U.S. Cl. 114—230 **8 Claims**

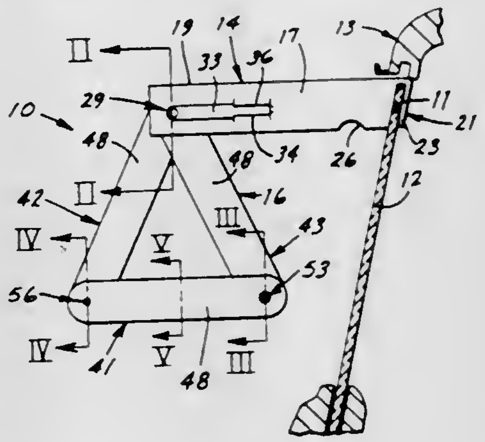
A buoyant surface object that tends to at all times occupy a fixed predetermined position due to the tensioning of at least two pennant lines that extend outwardly therefrom. Each pennant line is connected to a submerged float.

The floats are in turn connected to mooring lines that extend downwardly and outwardly therefrom. The lower ends of the mooring lines are secured to anchors. The floats due to their buoyancy tend to move to positions where their mooring lines would be vertically disposed. This tendency to so move is prevented by the pennant lines. The pennant lines as a result of tending to restrain the buoys from moving are tensioned and when no exterior force is exerted on the surface object maintain the surface object in the predetermined position. In the event that an external force moves the surface object from said predetermined position, the tension on at least one of the pennant lines is increased, and the tension on another of the pennant lines decreased, and an unbalanced force system prevails. As soon as the external force ceases to act on the surface object, the floats move to their initial positions to exert balanced forces on the pennant lines, and the surface object returning to said predetermined position.



3,703,152
DISTRESS SIGNALING DEVICE

Paul S. Morton, 82 Mandalay Drive, Oshtemo, Mich.
Filed Feb. 7, 1972, Ser. No. 224,033
Int. Cl. E01f *9/10*
U.S. Cl. 116—28 R **9 Claims**

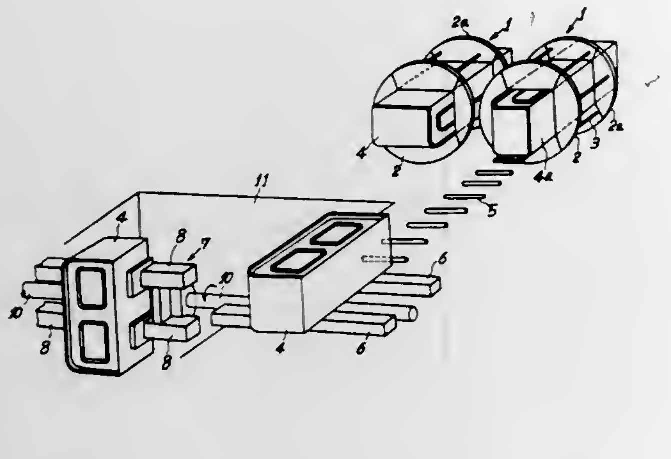


A vehicle distress signaling device. The signaling device has an elongated housing adapted to store a triangularly shaped and foldable distress signaling device therein. A hook is provided on the housing adjacent one end and is adapted to couple the housing to the upper margin of a vertically adjustable window panel on the exterior of a side of the vehicle. A coupling device is provided for coupling triangularly shaped signaling device to an end of the housing remote from the hook when the signaling device is unfolded to the triangular shape to thereby display the signaling device on the exterior side of the vehicle.

3,703,153
METHOD FOR BUILDING SHIPS

Kazuo Maeda, Ichihara, Japan, assignor to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan
Filed Dec. 14, Ser. No. 97,817
Int. Cl. B63b *3/04*
U.S. Cl. 114—77 R **4 Claims**

A method of building ships in which predetermined blocks of the hull are fabricated remotely and are transported to dockside at an elevated level. The blocks are displaced to overlie the dock bottom and are rotated downwardly onto a conveyor on the dock bottom and are mounted on the conveyor by means of a buffer plate which is adjustable on the conveyor. The block is then displaced into position adjoining



other hull blocks on the dock bottom and is adjusted in position to be united with the other hull blocks by means of the adjustable buffer plate.

ERRATUM

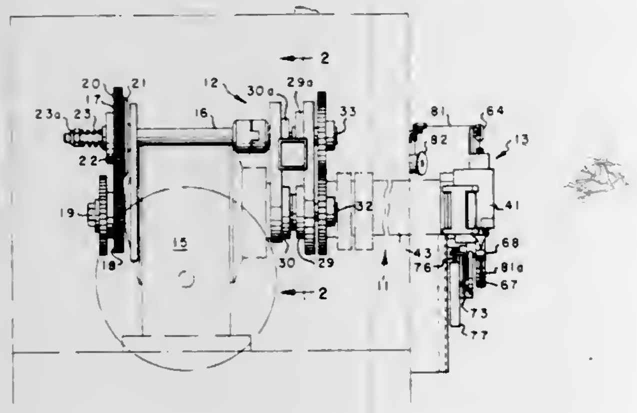
For Class 116—28 R see:
Patent No. 3,703,152

3,703,154
COATING APPARATUS

Norman E. Klein, Inman, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Sept. 15, 1969, Ser. No. 858,094
Int. Cl. B05c *11/00*

U.S. Cl. 118—6 **1 Claim**



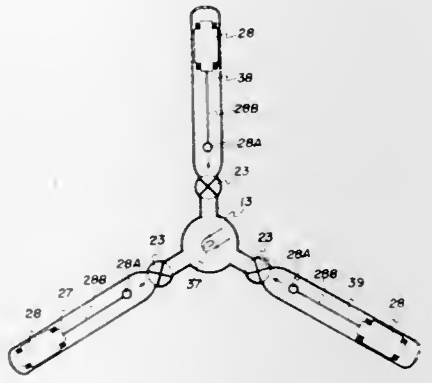
Apparatus for extruding a coating around a core including an extruder screw, stock feeder means operatively associated with the screw, and core coating means disposed adjacent the delivery portion of the screw; the stock feeder comprising pairs of opposed finger elements positioned to contact strip stock and means for sequentially moving the pairs of finger elements to engage the strip stock and to advance same into contact with the extruder screw; the coating means comprising a die having an opening therethrough, a guide member disposed within the opening forming a cavity through the die, means for withdrawing a coated core material from the die and means adjacent the core withdrawal means responsive to variations in the thickness of the coated core to control the withdrawal means.

3,703,155
APPARATUS FOR PHOTOCATHODE PROCESSING

John P. Choisser, 8487 Paseo Del Ocaso, La Jolla, Calif.

Filed Oct. 13, 1969, Ser. No. 870,413
Int. Cl. C23c *13/12*

U.S. Cl. 118—48 **4 Claims**



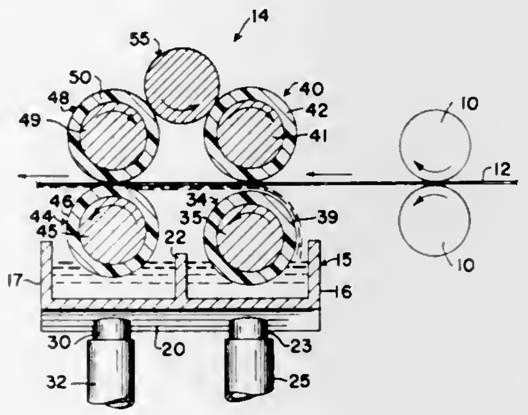
An evacuated coating chamber includes a substrate support and a centrally disposed heater means. A plurality of crucible means are located in separate chambers which are each radially disposed with respect to the coating chamber and having each a valve means operatively associated therewith. Means are adapted to sequentially translate the crucibles between said separate chambers and an operative position is proximity to said heater.

3,703,156
APPARATUS FOR APPLYING A CONVERSION LIQUID TO ELECTROSTATIC COPY MATERIAL

George P. Niesen, Niles, and Edward C. Marum, Arlington Heights, both of Ill., assignors to A. B. Dick Company, Niles, Ill.

Filed April 28, 1971, Ser. No. 138,175
Int. Cl. B05c *1/08, 11/02*

U.S. Cl. 118—117 **7 Claims**



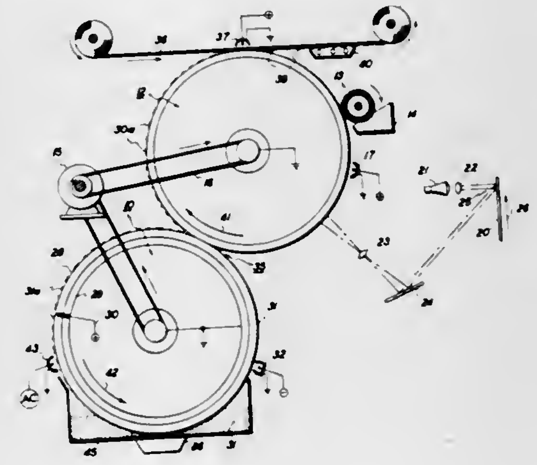
A length of developed electrostatic copy material is advanced to a conversion zone with the image side facing downwardly and is received in a gap defined by adjacent peripheral surfaces of upper and lower rollers, the lower roller being partially immersed in a conversion liquid contained in a trough. This lower roller is driven such that its linear peripheral speed is approximately three times the speed of the copy material whereupon such roller develops a film of the conversion liquid on its peripheral surface and applies such film as a metered layer to the underside of the copy material as the same passes through said gap. The copy material is then fed to the nip of a pair of upper and lower squeegee rollers, the lower squeegee roller being partially immersed in the conversion liquid. When the apparatus is not in use, the conversion liquid is drained into a closed storage tank.

3,703,157
METHOD AND APPARATUS FOR FORMING A UNIFORM LAYER OF POWDER DEVELOPER ON A SURFACE

John Maksymiak, Penfield, and Lawrence M. Hart, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 6, 1971, Ser. No. 104,364
Int. Cl. G03g *13/00*

U.S. Cl. 118—637 **11 Claims**



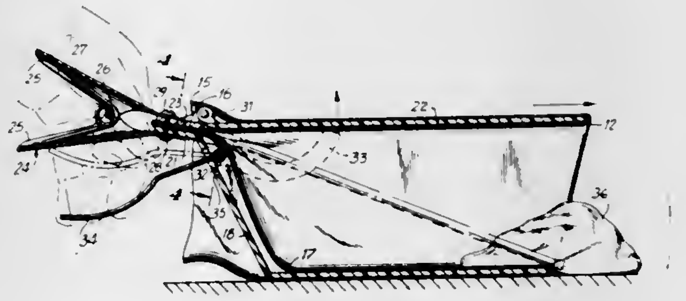
In an electrostatic recording system in which a donor roller is employed to carry a layer of toner to the photo-receptor member for use in developing an electrostatic latent image, the donor roller is loaded with a uniform layer of toner by rotating the donor roller through a bath of toner in a vibrating pan. The donor roller is positioned so that a portion of its circumference passes through the toner in the vibrating pan forming a varying depth bath of toner, the thinnest depth of toner being sufficiently thin to fluidize the toner in this thin layer area. In this thin level of toner the vibrations of the vibrating pan drives the toner into a highly fluid state and the toner adheres to the surface of the donor roller thereby loading the roller with a layer of toner. The layer is wiped to a uniform thickness as the roller passes through thicker levels of toner in the toner bath which are not in a fluid state.

3,703,158
SCOOP FOR ANIMAL WASTE

Seymour A. Lemler, 29 East 9th Street, New York, N.Y.

Filed Sept. 16, 1971, Ser. No. 181,167
Int. Cl. A01k *29/00*

U.S. Cl. 119—1 **6 Claims**



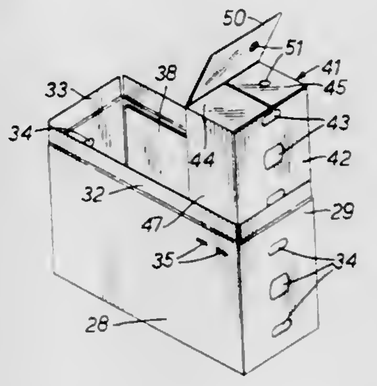
A scoop for the waste of an animal, such as a dog, which permits the dog owner to scoop the solid waste matter into a plastic bag without dirtying his hands or the scoop. The scoop is adapted to be loaded with a plastic bag in such a manner that, upon removal of the plastic bag, the exterior surfaces of the bag are clean and all surfaces of the bag that could come in contact with the solid waste matter are internal surfaces. The bag carrying the solid waste matter can be closed with a twist tie and deposited in a waste receptacle leaving a completely clean scoop ready for subsequent use.

3,703,159
CONTAINER FOR TRANSPORT OF ANIMALS

Brigadier George Patrick Rose-Miller, "Barevan" Cawdor, Nairn, Scotland

Filed Aug. 18, 1970, Ser. No. 64,705
Claims priority, application Great Britain, Oct. 3, 1969, 48,626/69
Int. Cl. A01k *1/02, 9/00*

U.S. Cl. 119—19 **21 Claims**



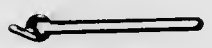
A box for transporting unweaned animals of the type which nurse in a standing position. The box, normally closed at its bottom and opened at its top includes a platform to support a liquid feed vessel vertically such that the vessel is prevented from either upward or downward movement. The vessel includes a lower opening and a feed device attached to said lower opening so that the nipple of the device is at a height similar to the height of the nipple on a mother animal and so that the nipple is at one end of the box and off to one side thereof so that the animal can stand length-wise in the box and turn its head while feeding.

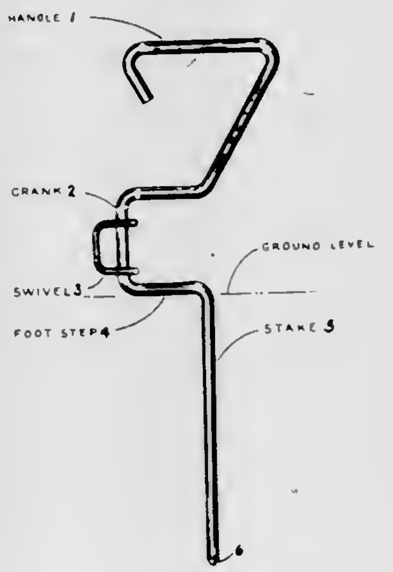
3,703,160
PET-TENDER

Milburn Emmett Biddle, 19115 Hartland Street, Reseda, Calif.

Filed Dec. 31, 1970, Ser. No. 103,043
Int. Cl. A01k *3/00*

U.S. Cl. 119—121 **2 Claims**

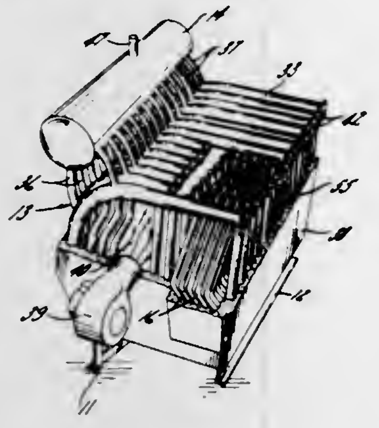




The Pet-Tender is an animal ground anchor tether, shown in FIGS. 1 and 2 , is a metal stake device which is attached to the leash of an animal being confined. The stake of the Pet-Tender is completely inserted in the ground by the application of foot force on the foot step, while holding the Pet-tender by the handle in a vertical position. The leash is attached to the swivel, which is located on the crank of the Pet-Tender. Forces exerted by the animal through the leash rotate the Pet-

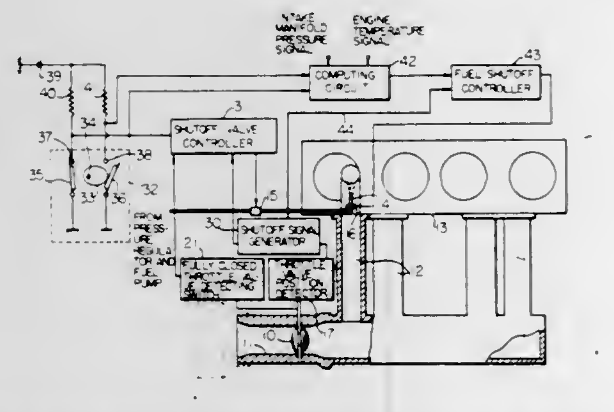
Tender in the ground about the stake, so that the crank and foot step, which is also the crank arm, lie in the same plane with the line of applied force. The reaction forces of the ground to the foot step and the stake provide adequate resistive moments and forces to prevent removal of the Pet-Tender by the animal. The Pet-Tender may be removed from the ground by exerting a relatively small vertical pull on the handle.

3,703,161
STEAM BOILER
Chadwell O'Connor, 3490 East Foothill Boulevard, Pasadena, Calif.
Filed Feb. 19, 1971, Ser. No. 116,944
Int. Cl. F22b *21/00*
U.S. Cl. 122—235 R **9 Claims**



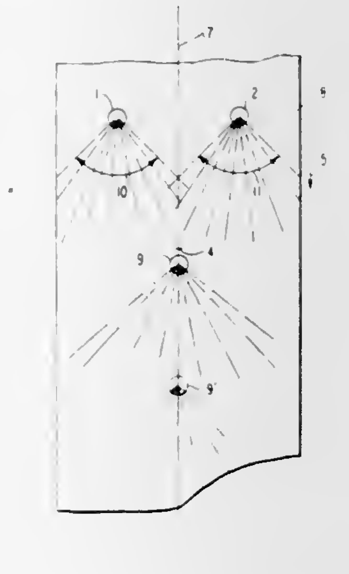
A water-tube boiler for generating steam wherein the steam is generated in a circulatory system which is separated from and independent of the boiler's main steam drum. The boiler includes a plurality of header tubes which collectively define a fire chamber, and which serve both to distribute water to the main convection tubes for heating and to recirculate the unevaporated portion of the water through the system after the generated steam is drawn off. During each circulatory cycle in the header tubes, the generated steam is separated from the unevaporated portion of the water and drawn off to the main steam drum where it is collected prior to discharge.

3,703,162
FUEL SHUTOFF DEVICE FOR INTERNAL COMBUSTION ENGINE
Shigeo Aono, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan
Filed Oct. 31, 1970, Ser. No. 80,439
Int. Cl. F02b *3/00;* **F02d** *31/00;* **F02b** *33/00*
U.S. Cl. 123—32 EA **10 Claims**



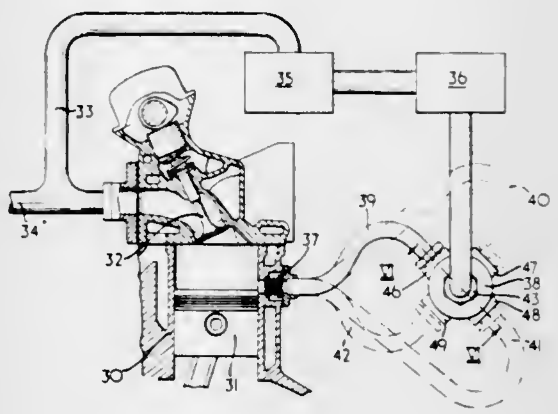
A fuel shutoff device adapted for incorporation into an automobile fuel supply system as to shut off the fuel supply during deceleration thereby reducing the amount of carbon monoxide and hydrocarbons emitted in exhaust. A throttle valve position detector is operatively associated with a throttle valve so as to produce a voltage signal corresponding to the position of the throttle valve. The voltage signal is applied to a fuel shutoff signal generator which generates a fuel shutoff signal when the time derivative of the voltage signal exceeds a predetermined value. The fuel shutoff signal is applied to a shutoff valve controller which is actuated to close a shutoff valve when the fuel shutoff signal is applied to the controller. The fuel shutoff signal is also applied to a fuel shutoff controller which de-energizes an injection pulse amplifying circuit when the fuel shutoff signal is applied to the controller. The present fuel shutoff device further includes a throttle valve switch which is adapted to be closed when the throttle valve is moved to its fully closed position. The throttle valve switch is connected to the shutoff valve controller. An engine driven triggering device which generates a signal indicating engine speed also is connected to the shutoff valve controller. Operation of the shutoff valve controller is such that with the throttle valve switch closed, when the engine speed rises to a first predetermined level, for example, 2000 rpm, the controller operates in such a manner as to close the shutoff valve. Further, with the throttle valve switch closed, when the engine speed decreases to a second predetermined level, for example, 1000 rpm, the shutoff valve is reopened by the controller. Since, in the present fuel shutoff device, the fuel supply to the cylinders is shut off during deceleration before the throttle valve is reached to its fully closed position, the amount of carbon monoxide and hydrocarbon exhaust is small in comparison with an automobile employing a conventional fuel shutoff device.

3,703,163
ROTARY PISTON INTERNAL COMBUSTION ENGINE
Heinz Lamm, Esslingen-St. Bernhardt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany
Filed May 15, 1970, Ser. No. 37,671
Claims priority, application Germany, May 17, 1969, P 19 25 174.2
Int. Cl. F02b *53/12*
U.S. Cl. 123—8.09 **13 Claims**



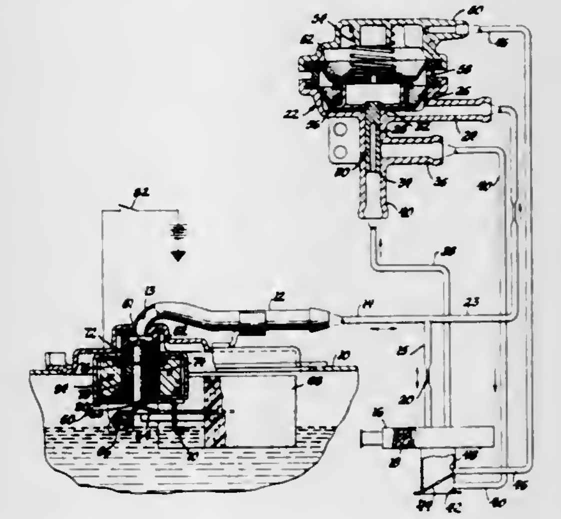
A rotary piston internal combustion engine particularly of trochoidal construction which has a rotating piston that slides along the running surface of the casing and which includes several spark plugs in the running surface of the casing which are arranged adjacent one another in the axial direction of the casing.

3,703,164
ATMOSPHERIC POLLUTION CONTROL ARRANGEMENT FOR INTERNAL COMBUSTION ENGINE
John Harold Weaving, Coventry, England, assignor to British Leyland Motor Corporation Limited, London, England
Filed Feb. 19, 1971, Ser. No. 116,828
Claims priority, application Great Britain, Feb. 19, 1970, 7,907/70
Int. Cl. F02m *25/06;* **F02b** *47/08*
U.S. Cl. 123—119 A **10 Claims**



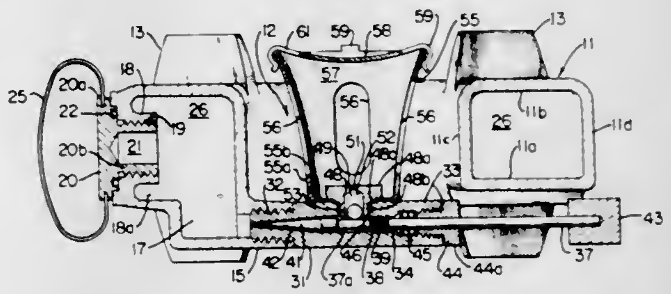
An internal combustion engine having a valve in addition to normal inlet and exhaust valves in the cylinders of the engine through which part of the gaseous products of combustion are removable, before they have passed through the exhaust system of the engine, and by which the gaseous products of combustion extracted through the additional valves are re-introduced into each cylinder of the engine after closure of the inlet valve thereof. By recirculating part of the exhaust gases from the cylinders in this way, the proportion of oxides of nitrogen in the final exhaust gases from the engine is reduced.

3,703,165
FUEL TANK VENT CONTROL
Kai H. Hansen, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed July 15, 1971, Ser. No. 162,995
Int. Cl. F02m *25/08*
U.S. Cl. 123—136 **4 Claims**



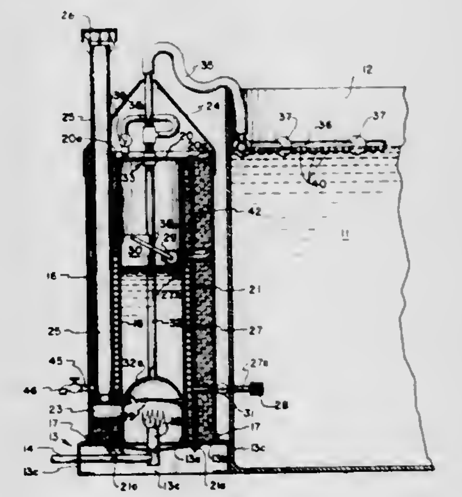
In an internal combustion engine powered vehicle, fuel vapors are vented from the fuel tank to the engine induction system. The tank vent line is controlled by a valve operated both by a float responsive to the fuel level and by a solenoid energized through the engine ignition switch.

3,703,166
LIQUID FUEL COOKING STOVE
Michael W. White, Jr., and Jacques A. Plamondon, both of Denver, Colo., assignors to Colorado Technologists Incorporated, Englewood, Colo.
Filed July 8, 1971, Ser. No. 160,747
Int. Cl. F24c *5/02*
U.S. Cl. 126—44 **23 Claims**



A portable liquid fuel stove is disclosed herein which is particularly suited for cooking out of doors. The stove includes an annular shaped, cast fuel tank with a central opening having circumferentially spaced depending bottom ribs and upstanding top ribs both preferably cast with the fuel tank to form an integral unit. A control valve assembly preferably extends radially inwardly from the tank, and a fuel vaporizing section extends transverse to the valve assembly in axial alignment within the central opening in a lower portion of the tank. Vaporized fuel is passed from the fuel vaporizing section through an orifice disposed within the central opening in a lower portion of the tank to provide a stream of vaporized fuel. A burner cup in the central opening is substantially confined within the vertical extent of the tank to provide a mixing chamber. The flame produced heats the tank to pressurize the tank to force the fuel from the tank into the vaporizing chamber and vaporize the fuel in the vaporizing chamber for continuous burning.

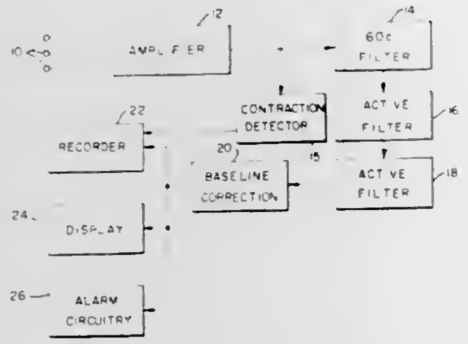
3,703,167
TANK HEATER
Pat Maher, 65 Grove Avenue, Salt Lake City, Utah
Filed June 14, 1971, Ser. No. 152,709
Int. Cl. F24h *1/00*
U.S. Cl. 126—350 R **7 Claims**



A heater for stock watering tanks and the like. A heating unit acts on a constantly replenished small volume of water to heat it and to build up a stream pressure that is discharged through openings in a floating tube that extends around the periphery of the tank.

3,703,168
FETAL HEART MONITOR WITH PARTICULAR SIGNAL CONDITIONING MEANS

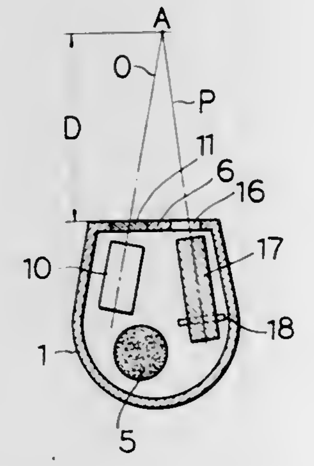
Richard D. Frink, 207 Sycamore Drive, Westwood, Mass.
Filed March 30, 1970, Ser. No. 23,737
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 R **4 Claims**



A fetal heart monitor capable of detecting fetal heart activity in a non-invasive manner and in the presence of noise and substantially stronger maternal heart signals. The system is also operative to simultaneously monitor labor contractions in a non-invasive substantially noise free manner, and additionally provides means for selectively displaying the rhythm ECG.

3,703,169
ENDOSCOPE

Teruo Ouchi, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Dec. 21, 1970, Ser. No. 99,769
Claims priority, application Japan, Dec. 27, 1969, 44/123642
Int. Cl. A61b *1/06, 1/12*
U.S. Cl. 128—6 **5 Claims**

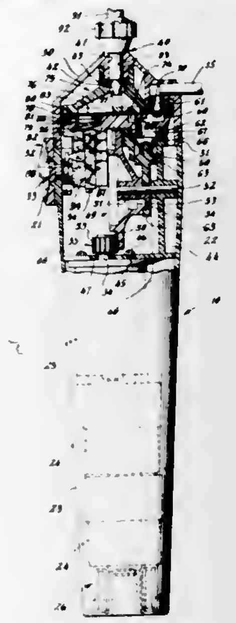


Endoscope for use with an instrument such as a forceps, a stripper brush, and a washing tube inserted through a guide channel provided in the endoscope. To facilitate and insure the exact operation of the inserted instrument, the optical axis of the observation optical system of the endoscope is so positioned that the optical axis is directed to the point at which the tip of the instrument is positioned during the operation of the instrument.

3,703,170
ORAL HYGIENE APPARATUS

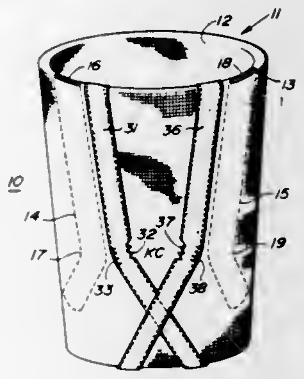
William D. Ryckman, Jr., Asheboro, N.C., assignor to General Electric Company
Filed March 4, 1971, Ser. No. 120,828
Int. Cl. A61h *9/00*
U.S. Cl. 128—66 **17 Claims**

Oral hygiene apparatus of the variable pressure pulsed liquid jet type that includes a hand-held unit and a liquid reservoir which may be separate or incorporated in the hand-held unit. The unit contains an electric motor, electrical energy supply means, a pulsating pump and a pressure regulator that is adjustable within set limits to control the maximum peak liquid output pressure and expels liquid equal to the liquid displacement of the pump regardless of the adjusted maximum peak liquid output pressure.



3,703,171
ATHLETIC KNEE SUPPORTER AND PROTECTIVE DEVICE

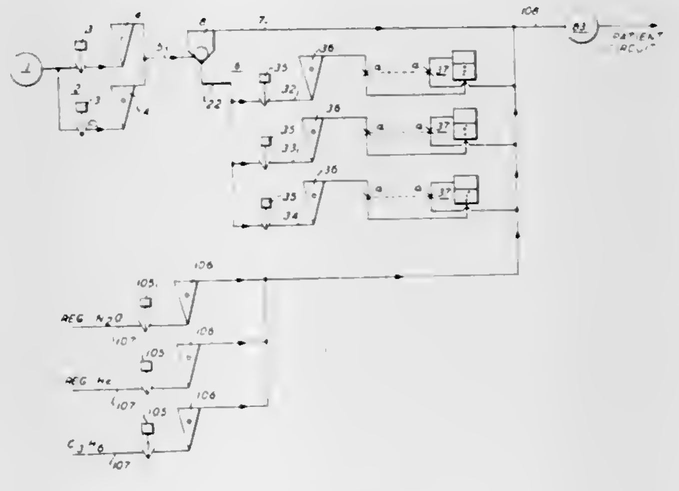
Charles A. Schiavitto, 604 North 8th Street, Allentown, Pa.
Filed March 9, 1971, Ser. No. 122,430
Int. Cl. A61f *3/00*
U.S. Cl. 128—80 C **10 Claims**

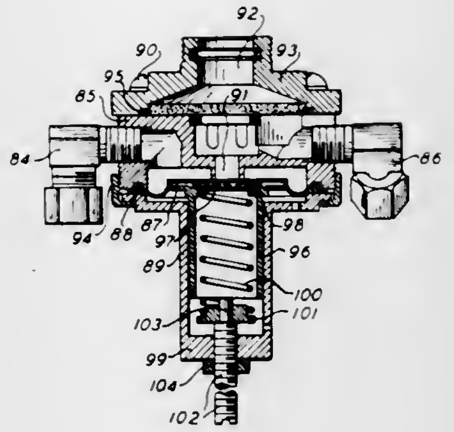


An athletic knee supporter and protective device is described, suitable for both contact and noncontact sports. The device includes a tapered elastic tubular means formed of two concentric tubes of elastic material for encompassing a leg of the wearer above and below the knee. Substantially planar stays, which are formed with obtuse angles, may include a layer of rigid material and an affixed layer of firm foam rubber. Pockets are formed in the tubular means at both sides of the knee by a stitching of the concentric tubes from the top of the tubular means, in which openings are formed for insertion of the stays, downward toward the knee and below the knee toward the rear of the wearer. Each pocket has an obtuse angle therein facing the rear of the knee for housing the stays. Leather-like strips are affixed to the tubular means, the strips having a plurality of notches along one side of the strip intermediate its ends and a plurality of slits along the other side thereof intermediate its ends. The strips extend from the top of the tubular means at a point one side of the center, down below the knee, compressing at the notches and expanding at the slits to cross below the knee at the bottom of the tubular means at the opposite side thereof, thereby forming an X immediately below the kneecap. A stave is provided axially along the tubular means anterior to the wearer. The stave can be a zipper in one embodiment; it can be a leather strip in another embodiment.

3,703,172
HEATED VAPORIZER ANESTHESIA MACHINE

Wayne W. Hay, Madison, Wis., assignor to Airco, Inc.
Continuation of Ser. No. 671,741, Sept. 29, 1967, abandoned.
This application June 26, 1970, Ser. No. 56,073
Int. Cl. A61m *17/00*
U.S. Cl. 128—188 **10 Claims**



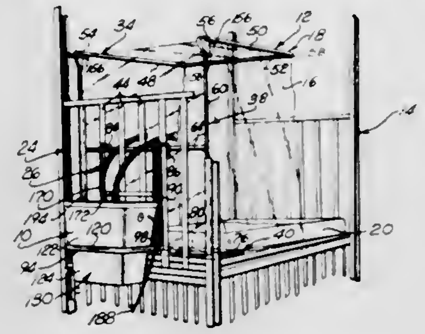


An anesthesia machine which utilizes a plurality of vaporizers, each individually adapted to be heated to a constant temperature when in use and governed by a shut-off valve assembly. The oxygen carrier passes from a source through a pressure regulator, needle valve, flowmeter calibrated in flowrate of oxygen to a by-pass valve and, thereafter, to a gas fluid circuit in parallel, one branch of which permits unadulterated oxygen flow therethrough when the pressure exceeds a predetermined level and the other branch of which is divided into three subbranches in parallel via a manifold, each sub-branch including a needle valve, flowmeter calibrated in flowrate of vapor, and a vaporizer containing liquid anesthetic agent. All branches join for passage through an altitude compensator valve operating on a back pressure principle to maintain the pressure in the upstream side of the compensator at a predetermined amount above average sea level atmospheric pressure by damping the effect of pressure fluctuations occurring in the downstream portion of the system on the upstream portion.

3,703,173
NEBULIZER AND TENT ASSEMBLY

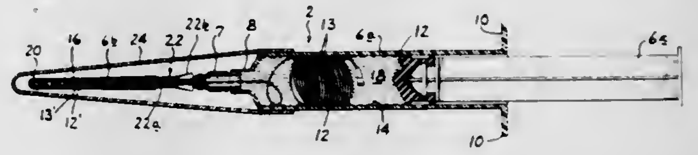
Ted A. Dixon, 60 Collver Road, Rocky River, Ohio
Filed Dec. 31, 1970, Ser. No. 103,101
Int. Cl. A61m *15/00*
U.S. Cl. 128—194 **16 Claims**

An improved apparatus for treating a patient in a therapeutic atmosphere includes a disposable canopy which is supported by a foldable canopy frame to at least partially enclose the patient. The canopy frame is firmly held against the head of the patient's bed by a foldable frame which supports a disposable nebulizer. To reduce the possibility of cross-contamination and cleanup costs, the nebulizer assembly and canopy are thrown away after treatment of the patient is completed. The tent and nebulizer frames can then be folded and stored at either the head of the bed or another storage location.



3,703,174
METHOD AND APPARATUS FOR CATHETER INJECTION

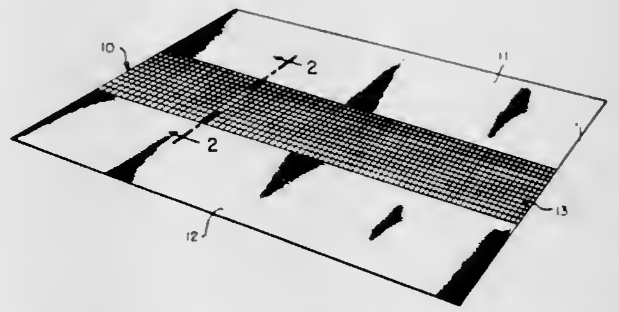
Gordon E. Smith, Madison, Wis., assignor to Medidyne Corporation, Chicago, Ill.
Filed July 14, 1970, Ser. No. 54,732
Int. Cl. A61m *5/00*
U.S. Cl. 128—214.4 **35 Claims**



A device for injecting an elongated member, like a catheter, into a passageway like a blood vessel, including a body from which a feeding means like a needle extends and which contains the elongated member extending into the feeding means. The space in the body including the elongated member is sealed except for its communication to the outside of the device through the feeding means. There is provided a source of fluid for said space and a means for applying pressure to the space. The elongated member is of a smaller size then the needle passageway so the fluid placed under pressure forms a cushion around the member which is impelled by the pressure from the outer end of the feeding means.

3,703,175
SIMULATED PRE-FOLDED DIAPER CONSTRUCTION

Dale W. Kern, Aiken, S.C., assignor to Riegel Textile Corporation, Ware Shoals, S.C.
Filed Oct. 12, 1970, Ser. No. 80,047
Int. Cl. A61f *13/16*
U.S. Cl. 128—284 **1 Claim**

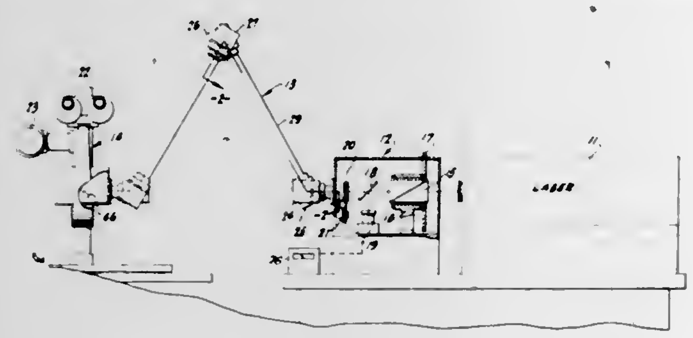


A diaper is disclosed having generally, the rectangular dimension of pre-folded diapers and consisting of a simulated pre-fold multi-ply center panel and two single-ply side panels.

3,703,176
SLIT LAMP PHOTOCOAGULATOR

Arthur Vassiliadis, Los Altos; Harold C. Zweng, Woodside; Norman A. Peppers, Belmont, and Lloyd E. Alterton, Sunnyvale, all of Calif., assignors to Stanford Research Institute, Menlo Park and Stanford University, Stanford, Calif., part interest to each

Filed May 28, 1970, Ser. No. 41,505
Int. Cl. A61n *5/01*
U.S. Cl. 128—395 **8 Claims**



A combination slit lamp and laser photocoagulator for treating eye disorders in which the laser is coupled to the slit lamp through an articulated arm. The slit lamp optics are arranged such that the laser beam is always in focus at the focus of the slit lamp and one lens in the laser optics is movable so as to vary the point on the eye where the laser impinges. A shutter blocks most of the laser output but permits a small amount to pass for alignment purposes. Means are provided to vary the power of the laser beam which is applied to the eye and indicating means are provided to indicate the amount of power. Means are also provided for varying the spot size of the laser where it impinges upon the eye.

3,703,177
SMOKING PRODUCT AND METHOD OF MAKING SAME

John D. Hind, Richmond, and Matthias F. Kelley, Jr., Bon Air, both of Va., assignors to Philip Morris, Incorporated, New York, N.Y.

Filed Aug. 13, 1970, Ser. No. 63,648
Int. Cl. A24b *03/14*
U.S. Cl. 131—2 **13 Claims**

A smoking product is prepared from waste beet pulp that may be used alone or may be blended with any desired proportion of tobacco. The process comprising the acid hydrolysis of the beet pulp to release beet pectins, and at least an alkaline earth treatment thereafter to cause cross-linking of the pectins and forming a binding agent for the exhausted beet matrix. Preferably a demethylation step on the released pectins is carried out prior to the cross-linking reaction. The final slurry is then dried by known procedures to form a smoking product.

3,703,178
SINGLE-CYLINDER INTERNAL COMBUSTION ENGINE

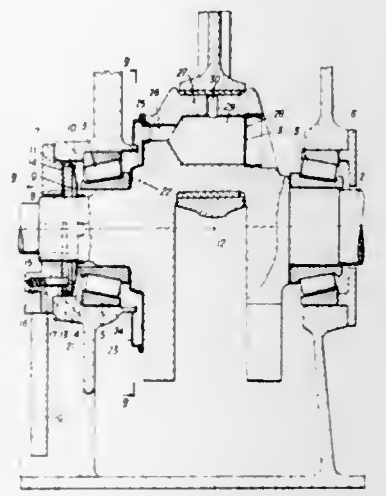
Erich Schreiber; Fritz Freyn, and John Norberg, all of Graz, Austria, assignors to Hans List, Graz, Austria

Filed April 22, 1971, Ser. No. 136,507

Claims priority, application Austria, April 24, 1970, A 3794/70

Int. Cl. F01m *1/06*
U.S. Cl. 184—6.5 **6 Claims**

A single-cylinder internal combustion engine comprising a crankshaft running on tapered-roller bearings in the front walls of the crankcase and a vane-type oil pump for the supply of oil to the connecting-rod bearing at the crankpin of the crankshaft, consisting of a rotatively driven ring with a front-end annular groove whose depth diminishes to zero from a point of maximum depth as far as an opposite peripheral point and wherein an elastic pin engages dividing the space defined by the annular groove and an adjacent stationary abutment into a suction chamber impinged upon by oil and a delivery chamber, the latter communicating via an oil drainage hole and oil ducts in the crankshaft with a crossbore of the crankpin ending in the connecting-rod bearing.



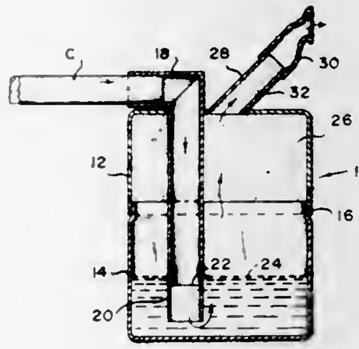
3,703,179
SMOKE FILTERING DEVICE

Jesse L. Nubla, P.O. Box 2556, Manila, Philippines

Filed Nov. 17, 1970, Ser. No. 90,378

Claims priority, application Philippines, July 16, 1970, 1367

Int. Cl. A24f *01/30*
U.S. Cl. 131—173 **1 Claim**



A smoke filtering device for smoking tobacco including a two part receptacle, an inlet to the receptacle, an outlet from the receptacle, a porous filter in the inlet, a porous filter in the outlet, a liquid filter in the receptacle and an additional porous filter in the receptacle above the surface of the liquid filter.

3,703,180
DEVICES FOR APPLYING BEAUTY AIDS TO THE PERSON

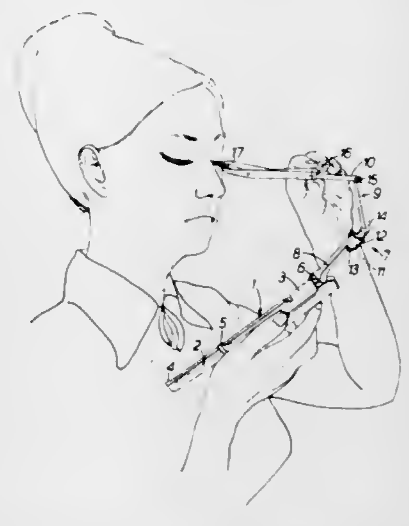
Eric Victor Aylott, Welwyn Garden City, England, assignor to Eylure Limited, Welwyn Garden City, England

Filed Dec. 30, 1970, Ser. No. 102,581

Claims priority, application Great Britain, April 2, 1970, 15,681/70; June 23, 1970, 30,466/70; Oct. 15, 1970, 49,072/70

Int. Cl. A45d *40/26*
U.S. Cl. 132—88.7 **11 Claims**

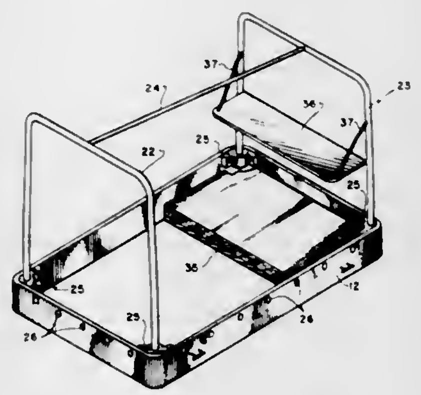
This invention provides a simple and effective device for assisting in the application of beauty aids such as artificial eyelashes, lipstick or eyebrow pencil to the face. The device includes a base member capable of being rested against the chest or bust of the user, a mirror mounted on the base member, an articulated arm connected to the base member in such a way that the arm may be manipulated by the user and interchangeable means at the end of the arm for applying different beauty aids.



3,703,181
CONVERTIBLE TENT AND LUGGAGE CONTAINER

Dale Tholen, 10706 Cranks Road, Culver City, Calif.

Filed March 1, 1971, Ser. No. 119,529
Int. Cl. A45f *1/00*
U.S. Cl. 135—1 A **3 Claims**



A device which can be fixed to the luggage rack of a vehicle to store and transport items and can be removed from the luggage rack and used as a sleeping enclosure. The device consists of two open rectangular boxes which can be clamped together with their open ends mating to form the luggage container or separated so that each box can be used to form a sleeping enclosure. A mattress may be fitted inside each box. Detachable supporting frames may be mounted on each box to support a tent cover. Nesting blocks of various sizes may be used to level the box on irregular or inclined terrain. The mattresses, frames, tent cover and nesting blocks can be stored in the luggage container.

3,703,182
TELESCOPIC UMBRELLA

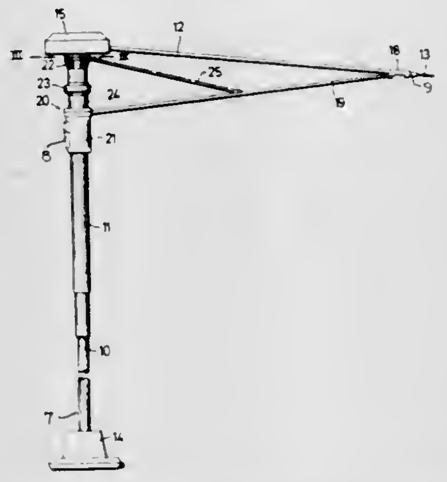
Wolfgang Uthemann, and Richard Zimmermann, both of Leichlingen, Rhineland, Germany, assignors to W. Bauermann & Sohne Gmbh, Hilden, Germany, by said Uthemann and Rosenkaimer Gmbh, Leichlingen, Rhineland, Germany, by said Zimmermann

Filed June 5, 1970, Ser. No. 43,704

Claims priority, application Germany, June 7, 1969, G 69 22 739.0; Sept. 5, 1969, P 19 45 098.7

Int. Cl. A45b *19/08, 19/10*
U.S. Cl. 135—25 **19 Claims**

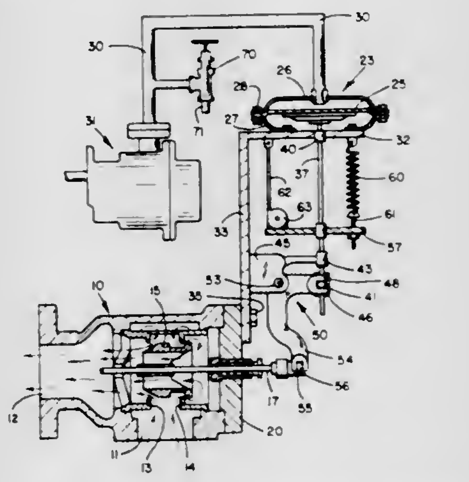
A telescopic umbrella includes a longitudinally extending crown on one end of the main shaft and both main and auxiliary sliders on the shaft. A rib assembly is pivotally secured to the flanks of the crown, main struts extend between the main slider and the rib assemblies and auxiliary struts extend between the main struts and the auxiliary slider. The plane formed by the rib assembly, main strut and auxiliary strut of at least one frame support unit is twistedly inclined with respect to a plane passing through the longitudinal axis of the shaft so that when the frame is folded these frame elements are not maintained in radial alignment so that the umbrella can be folded more compactly.



3,703,183
TURBINE SPEED CONTROL

Richard A. Worthen, Greensburg, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Feb. 11, 1971, Ser. No. 114,428
Int. Cl. G05d *13/40*
U.S. Cl. 137—47 **1 Claim**



The position of the valve controlling the supply of fluid operating a prime mover, such as a turbine, is determined by a force produced by a speed control mechanism. The level of the applied force is proportional to the speed of the prime mover. A variable force spring and a constant force spring are connected in parallel relation and conjointly opposes the force produced by the control mechanism.

3,703,184
SEALING MEANS FOR FUEL INJECTION VALVES

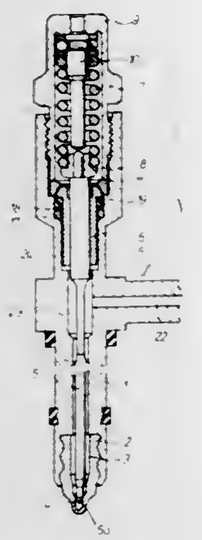
Friedrich Messerschmidt, Stuttgart-Weilimdorf, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed June 29, 1971, Ser. No. 157,996

Claims priority, application Germany, June 29, 1970, P 20 32 005.2

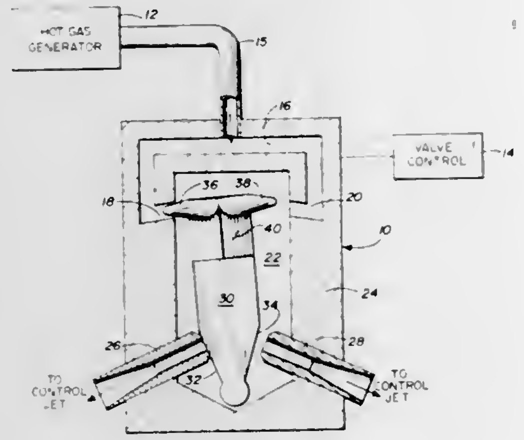
Int. Cl. F16k *31/12*
U.S. Cl. 137—509 **5 Claims**

In a fuel injection valve the valve needle is slidably held by a guide sleeve having a spherical head that cooperates with a spherical support in the valve body to permit a slight swiveling motion of the sleeve and thus a centering of the valve needle with respect to its valve seat. Below its spherical portion, the said head is also supported by an internal shoulder of the valve body with the interposition of a metallic ring and an axially and radially sealing packing ring.



3,703,185
FORCE BALANCING FLAPPER VALVE

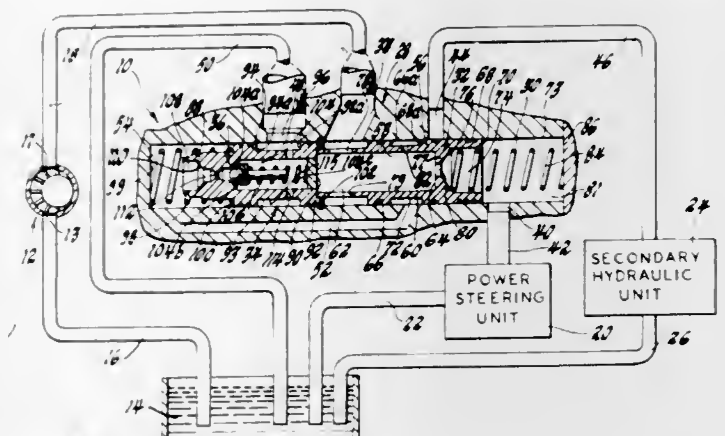
Joe D. Usry, Arlington, Tex., assignor to E-System, Inc., Dallas, Tex.
Filed April 7, 1970, Ser. No. 26,322
Int. Cl. G05d *16/20;* **F15b** *5/00*
U.S. Cl. 137—82 **9 Claims**



Flapper valves of the type described may be used in a roll control thruster program for rocket maneuvering and the like where relatively small torque motor valve actuators are preferred. The flapper valve inlet is split into two nozzle passages feeding oppositely into a central valve chamber or cavity which contains a pivotally mounted flapper. A conventional pair of oppositely directed outlet passages or ports communicate with the chamber and are opened and closed by the movable flapper. The upstream or inlet section of the flapper is provided with specially shaped poppets to produce force moments which along with force moments produced on the flapper at the outlet ports has a tendency to center the flapper. The upstream or inlet portion of the flapper has an outline such as to effect a reduction of the reaction force of a fluid jet impinging on the upstream section of the flapper. Preferably, the poppets on the upstream section of the flapper are shaped to make the net area of the two upstream nozzle orifices constant for any position of the movable flapper.

3,703,186
FLOW DIVIDER CONTROL VALVE ASSEMBLY

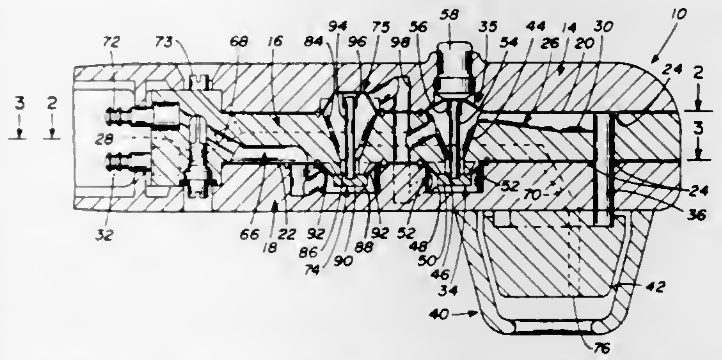
Lee M. Brewer, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 12, 1971, Ser. No. 171,166
Int. Cl. G05d *15/00*
U.S. Cl. 137—101 **4 Claims**



In a preferred form, this disclosure relates to a flow divider control valve assembly for controlling the flow of a fluid from a variable fluid pressure and supply source and which has a flow divider valve means with a first flow control orifice permanently operatively connecting an inlet port with a first or priority outlet port and a second flow control orifice operatively connected with the inlet port. The flow divider valve means is shiftable in response to a predetermined pressure drop across the first flow control orifice to limit the flow out the first outlet port to a predetermined rate by diverting the excess fluid to a second outlet port via the second flow control orifice. An operating valve means which is operatively connected with the inlet port and with the second flow control orifice at its downstream side is shiftable in response to a predetermined pressure drop across the second flow control orifice to limit the flow out the second outlet port to a second predetermined rate by allowing the excess fluid supply to pass out an exhaust port.

3,703,187
DISPENSING VALVE

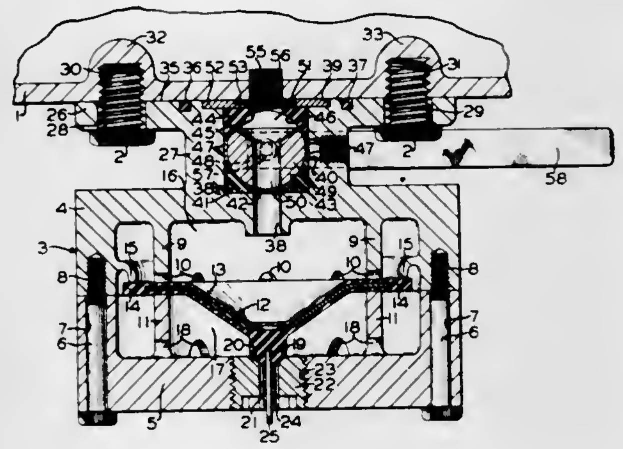
Jack J. Booth, P.O. Box 10872, Dallas, Tex.
Filed Dec. 11, 1970, Ser. No. 97,220
Int. Cl. B67d *5/56*
U.S. Cl. 137—114 **15 Claims**



A dispensing valve includes a housing comprising upper, center and lower members, and gaskets positioned between the members. A plurality of water valves and a plurality of corresponding syrup valves are formed in the housing. Each valve includes a portion of one of the gaskets for normally preventing flow between the lower member and the center member of the housing, and a rod for disengaging the gasket portion and thereby permitting flow. The rods of the water valves are activated by pushbuttons mounted in the upper member of the housing while the rods of the syrup valves are actuated by the pressure of water flowing through the corresponding water valves.

3,703,188
AUTOMATIC DRAIN VALVE DEVICE

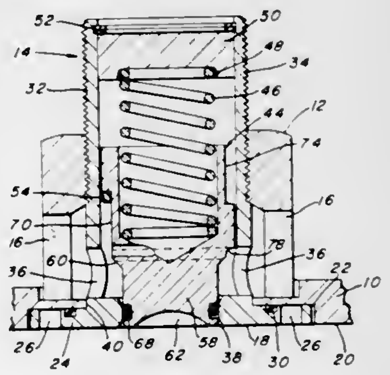
Daniel G. Wagner, Pittsburgh, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.
Filed March 23, 1970, Ser. No. 21,630
Int. Cl. F16t *1/14*
U.S. Cl. 137—204 **2 Claims**



This invention relates to a drain valve apparatus that includes a manually operative means and an automatically operative means arranged in series with the manual means adjacent a storage reservoir from which each is operative to cause the expulsion of contaminants. The manual means comprises a three-position spherical valve having a passageway extending through its center and a valve seat therefor. This valve seat is formed by two identical members each constituting one-half of a cube that is provided with a hemispherical cavity and four semicircular ports, one located on each side of the member and opening into the hemispherical cavity at the outer periphery thereof. The semi-circular ports in the two valve seat members, irrespective of how the two members are arranged one with respect to the other so long as the hemispherical cavities form a spherical cavity for receiving the spherical valve, provide a bearing for receiving a valve stem that is formed integral with the spherical valve to which stem a handle is secured, and a communication through which fluid under pressure and contaminants may be released from the reservoir to atmosphere when the spherical valve is manually rotated by the handle to one of its three positions. When the spherical valve is manually rotated to a second position, it closes the communication to atmosphere and establishes a communication between the reservoir and the automatically-operative means. In its third position, the spherical valve closes both of the above-mentioned communications.

3,703,189
DRAIN VALVE

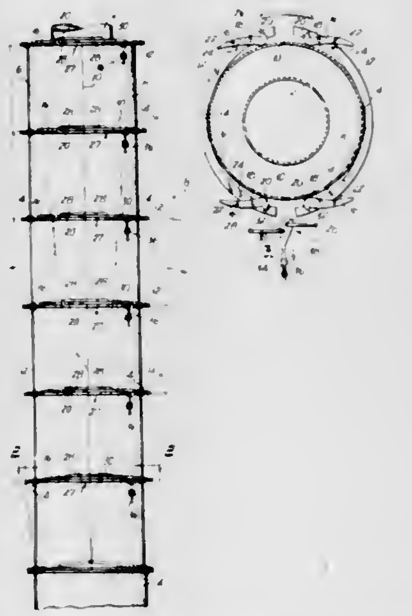
Floyd G. Koller, Dayton, Ohio, assignor to Auto-Valve, Inc., Dayton, Ohio
Filed Jan. 31, 1969, Ser. No. 795,458
Int. Cl. F16k *31/528, 43/00*
U.S. Cl. 137—329.06 **8 Claims**



A drain valve is so designed that its primary seal can be removed and replaced without substantial loss of fluid through its drain port. For this purpose, the valve member carrying the primary seal has a secondary seal adapted to close the drain port.

3,703,190
BREAKAWAY CONDUCTOR PIPE

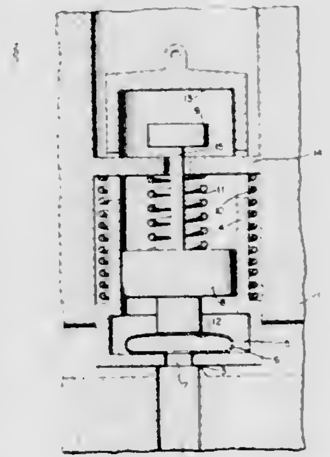
William N. Schoeffler, Route 1, P.O. Box 389, Carencro, La.
Filed Sept. 24, 1970, Ser. No. 74,965
Int. Cl. C21b *33/03;* **F16l** *9/22*
U.S. Cl. 137—375 **3 Claims**



A pair of semicylindrical conductor pipe sections are butted along their edges and releasably clamped around an upstanding well casing in a body of water. The clamped pipe sections can be released from a remote location, to fall away from the well casing and expose a portion of the latter for cutting and sealing in the event of well blow-out or fire.

3,703,191
VALVE DEVICE

Staffan Walter Ekstrom, Lidingo, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden
Filed Dec. 23, 1970, Ser. No. 100,960
Claims priority, application Sweden, Dec. 23, 1969, 17812/69
Int. Cl. F16k *31/12*
U.S. Cl. 137—494 **4 Claims**

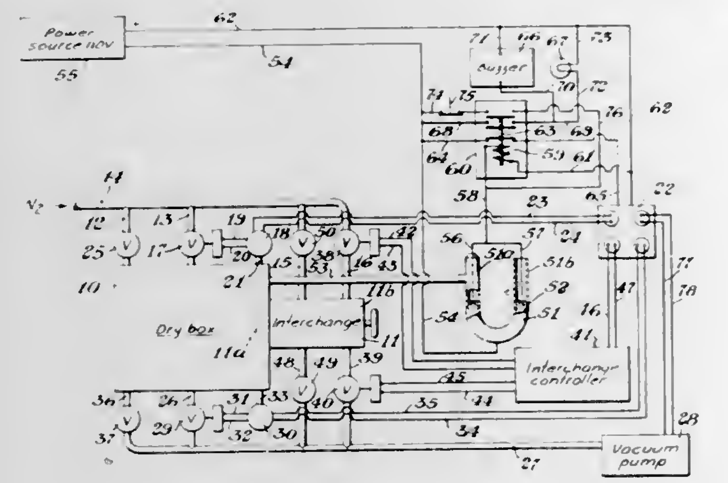


A valve device comprising a valve housing with a feeding channel, the inlet of which has a valve seat and a balanced valve member arranged to contact said valve seat. The valve is provided with an inner pressure sensitive chamber which is connected with the inlet via an opening in the chamber walls. The pressure sensitive chamber is arranged to operate the valve body in the opening direction and bring it out of balance at a predetermined pressure.

3,703,192
ALARM AND SAFEGUARD SYSTEM FOR A CONTROLLED ENVIRONMENT BOX

Gerald R. Staudacher, Bay City, and Sidney W. Ames, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 29, 1971, Ser. No. 110,805
Int. Cl. G04c *23/00;* **G05b** *19/00;* **C06b** *21/02*
U.S. Cl. 137—554 **5 Claims**

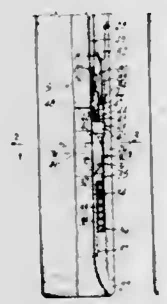


An alarm and safeguard system is disclosed which is particularly adapted for use with an automatically operated, controlled environment box, usually referred to as a "dry box." A manometer partly filled with mercury is in direct communication with the dry box and is electrically connected to a power source and to an electromagnetic relay. If the pressure in the dry box atmosphere drops below or rises above a pre-set safe operating level, the mercury in the manometer will contact one of the electrical connections to the relay and thereby energize the relay. Energizing of the relay completes a circuit through an alarm system comprising a buzzer and a light. Activation of the buzzer and the light thereby provides both an audible and a visible signal which draws attention to the abnormal pressure condition in the box.

3,703,193
VALVES

George Max Raulins, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Dec. 28, 1970, Ser. No. 102,004
Int. Cl. F16k *11/16*
U.S. Cl. 137—630 **18 Claims**

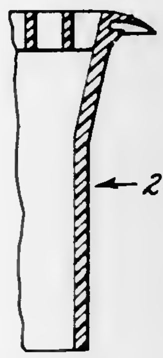


A valve of the type wherein the valve closure member is operable by an actuator member movable longitudinally of a flow passage in the valve housing for opening and closing off flow through the passage, and particularly a rotary valve having a closure member rotatable between opened and closed positions with respect to a longitudinally movable tubular seat member having an external equalizing valve member thereon by means of which pressures are equalized on opposite sides of the valve closure member and the movable seat before movement of the valve closure member occurs in either opening or closing the valve, and wherein the equalizing valve has a smaller area exposed to the pressure in the flow passage to permit the equalizing valve to be moved from closed to open position before the rotary valve is opened whereby a lesser force is needed to fully open the valve.

3,703,194
RESILIENT CONNECTOR

Louis Giordano, P.O. Box 394, Califon, N.J.

Continuation-in-part of Ser. No. 846,800, Aug. 1, 1969, abandoned. This application July 30, 1970, Ser. No. 59,609
Int. Cl. F16l *31/00*
U.S. Cl. 138—109 **3 Claims**

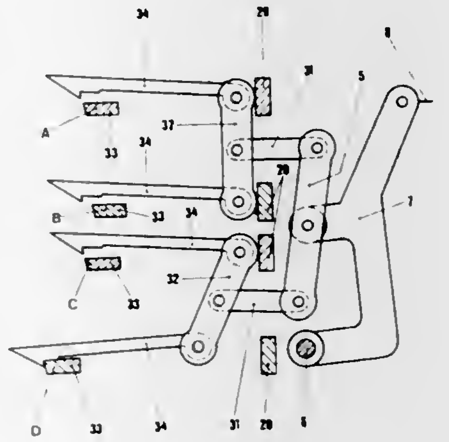


A resilient connector suitable for use on sheet metal which comprises an integral resilient plastic molding having a lower tubular section and a pair of flanges at its top extremity. The edges of an opening in sheet metal are grasped between the flanges. Preferably a grid is molded integrally with the top end of the device, and assumes a position substantially flush with the sheet metal.

3,703,195
HEDDLE FRAME LIFT DEVICE

Rudolf Schwarz, Horgen-Zurich, Switzerland, assignor to Staubli AG, Horgen-Zurich, Switzerland

Filed Aug. 12, 1970, Ser. No. 63,090
Claims priority, application Switzerland, Aug. 13, 1969, 12283/69
Int. Cl. D03c *1/06*
U.S. Cl. 139—71 **3 Claims**

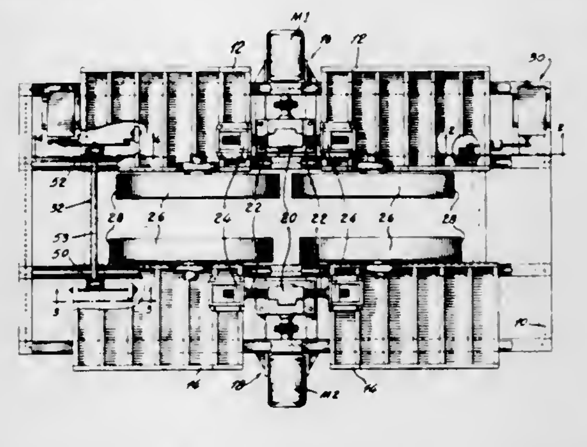


High-speed heddle frame lift device, also known as a shed forming apparatus, in which the control times for the draw members amount up to two rotations of the drive heddle frame of the loom. Each heddle frame lift unit is composed of several known shed forming devices which are arranged parallel and one behind the other. While one heddle frame lift device releases the heddle frame lift, the second heddle frame lift device is being controlled for the next lift.

3,703,196
SYSTEM FOR CONTROLLING THE SETTING OF A QUADRUPLE BAND SAW

Constantin Hedrei, Montreal, Quebec, Canada, assignor to Forano Limitee, Montreal, Quebec, Canada

Filed Oct. 16, 1970, Ser. No. 81,380
Int. Cl. B27b *15/08*
U.S. Cl. 83—806 **9 Claims**



A system for controlling the setting of a quadruple band saw having a fixed frame, a pair of rear and a pair of front sliding bases slidably mounted on the fixed frame and respectively supporting a pair of saw blades, and a drive unit for operating each pair of sliding bases in synchronism. The system comprises a first device for controlling the drive unit of the rear pair of sliding bases, and a second device for controlling the drive unit of the front pair of sliding bases to adjust the distance of the front pair of saw blades with respect to the rear pair of saw blades when the rear pair of saw blades is stationary and for maintaining a relative distance between the front and rear pairs of saw blades when the rear pair of saw blades is moving.

3,703,197
CARPET BACKING

Lee F. Samler, Baltimore, and John J. Boone, Ellicott City, both of Md., assignors to Esso Research and Engineering Company

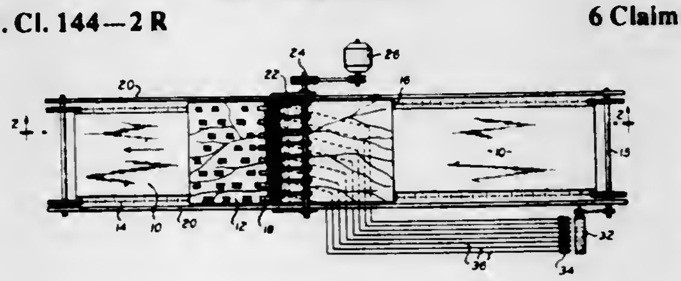
Filed May 13, 1971, Ser. No. 143,251
Int. Cl. B32b *27/08;* **D06n** *7/00*
U.S. Cl. 117—138.8 E **4 Claims**

A woven polypropylene ribbon carpet backing is provided having a special coating consisting essentially of 18 - 23 parts of butyl rubber, 6 - 8 parts of polyoxyethylene lauryl alcohol, up to 1 - 5 parts stearate lubricant, up to 2 parts polyethylene glycol and 5 - 6 parts of calcium carbonate.

3,703,198
APPARATUS FOR MAKING TEXTURED PANELS

Donald F. Luebs, Vienna, Va., and Frederick R. Ashby, Red Oak Ridge, N.Y., assignors to Champion International Corporation

Division of Ser. Nos. 759,624, Sept. 13, 1968, and Ser. No. 35,011, May 6, 1970, Pat. No. 3,616,826, and Ser. No. 118,666, May 6, 1970. This application Feb. 25, 1971, Ser. No. 118,665
Int. Cl. B27c *5/06*
U.S. Cl. 144—2 R **6 Claims**

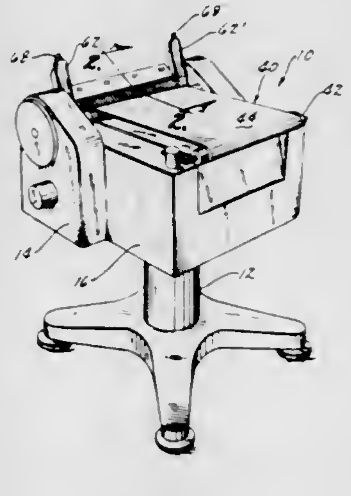


This invention pertains to the method, and/or apparatus for rapidly producing the same so that fibrous board products including plywood panels would appear to simulate an adze surfaced product having a rustic appearance. The "distressing" or cutting of the product may be minimal or partial distressing or may be total distressing including overlapping cuts, or cuts within previous cuts.

3,703,199
AUTOMATIC BLADE CONTROL MECHANISM FOR MEAT SKINNING MACHINES

Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Continuation-in-part of Ser. No. 706,941, Feb. 20, 1968, Pat. No. 3,559,707, which is a continuation-in-part of Ser. No. 616,692, Feb. 16, 1967, abandoned. This application April 9, 1970, Ser. No. 26,987
Int. Cl. A22c *17/12*
U.S. Cl. 99—589 **16 Claims**



An automatic blade control mechanism for meat skinning machines comprising a laterally extending skin gripping roll having a cutting blade movably positioned adjacent thereto. A power means is connected to the gripping roll to cause the rotation thereof so that a layer of meat can be moved rearwardly towards the cutting blade to separate a layer of skin from the meat. A blade control means is connected to the opposite ends of the cutting blade to cause the cutting blade to automatically move into a cutting position upon engagement with the meat. Each of the blade control means comprises an end plate secured to the end of the cutting blade and having a biased support means connected thereto which yieldably resists the upward movement of the cutting blade away from the gripping roll. A support arm is secured to the support means and is operatively connected to a crank arm having its axis of rotation below and forwardly of the rotational axis of the gripping roll. The rearward end of the crank arm is pivotally connected to the upper end of a spring loaded rod which is pivotally and slidably connected adjacent its lower end to a control lever. The control lever may be selectively pivotally moved to a first position whereby the cutting blade is moved outwardly and rearwardly from the gripping roll for cleaning purposes. The control lever is yieldably normally positioned in a second position wherein the cutting blade is in a position to move into its cutting position. The engagement of the cutting blade by the meat causes the support arm and the crank arm to be pivotally moved thereby causing the spring loaded rod to yieldably and slidably move downwardly, against the spring resistance imposed thereon, with respect to the control lever to permit the cutting blade to move into its cutting position to separate the layer of skin from the meat. The instantaneous initial bite of the cutting blade into the meat is enhanced and accelerated by pivoting the cutting blade from its position adjacent the gripping roll rearwardly and downwardly into its cutting position.

3,703,200
TREATING CEREAL GRAINS AND SEEDS

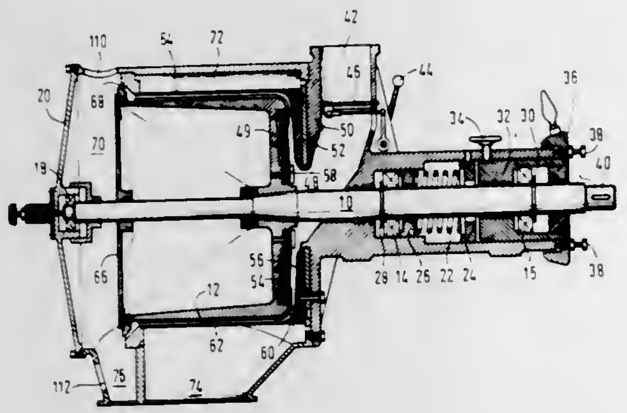
Leslie Palyi, 23 Larabee Cres., Don Mills, Ontario, Canada, and Helge Larsen, Asaa, Jutland, Denmark

Filed July 28, 1970, Ser. No. 58,798

Claims priority, application Germany, July 28, 1969, P 19 38 328.9

Int. Cl. B02b *3/00*

U.S. Cl. 99—233.8 **26 Claims**



Seeds and grains are dehulled in an apparatus comprising a drum rotating in a casing. The seeds are first treated in a radial gap between an end face of the drum and the casing and then between a peripheral face of the drum and a surrounding part of the casing.

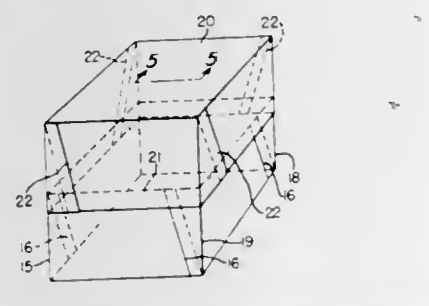
3,703,201
FLEXIBLE FABRIC CONTAINER AND METHOD OF MAKING SAME

William Musyt, 1311 Brittain Road, Akron, Ohio, and James D. Tremelin, 490 McPherson Avenue, Akron, Ohio

Filed Dec. 22, 1969, Ser. No. 887,178

Int. Cl. B65d *81/00*

U.S. Cl. 150—0.5 **3 Claims**



A method of making an improved flexible crash resistant fabric container, the building steps comprising coating the fabric with an elastomeric material without obtaining penetration of the elastomeric material into the interstices of the fabric and plying up the fabric over the building form, wherein the seams are placed at least one inch away from corners and the other seams in the multiplied construction and the seam area is formed by overlapping at least one inch.

3,703,202
TREAD RING FOR REMOVABLE TREAD TIRES

Luigi Maiocchi, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

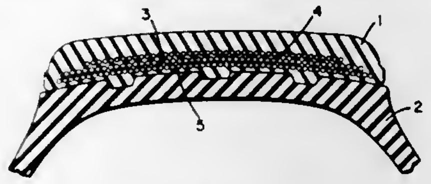
Filed March 3, 1971, Ser. No. 120,653

Claims priority, application Italy, March 12, 1970, 21827

Int. Cl. B60c *11/02*

U.S. Cl. 152—175 **2 Claims**

A tread ring for removable tread tires which is provided with a tension-resistant armor formed by a helically wound metal cord having coils disposed substantially parallel to the mid-circumferential plane of the tire. This structure is provided with layers disposed radially inwardly and outwardly of the armor. The layers embody metal cords disposed parallel to one another in each layer and extend along two directions crossed relative to the mid-circumferential plane of the tire.



The ratio between tensile strength of the layers and the armor is greater than 0.3 and less than 1.

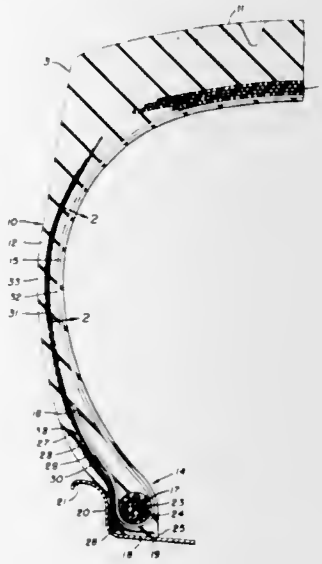
3,703,203
RADIAL WIRE TIRE HAVING IMPROVED SIDEWALL CUT RESISTANCE

Robert O. Simpson, 2371 Wyandotte Ave., Cuyahoga Falls, Ohio

Filed June 12, 1970, Ser. No. 45,680

Int. Cl. B60c *19/12*

U.S. Cl. 152—354 **6 Claims**



Radial wire tire having four plies of unstretched nylon tire cord fabric disposed in the sidewalls thereof midway between the wire carcass and the outer surface of the sidewall at an angle of between 80° and 88° and extending substantially from the bead portion to the shoulder portion of the tire.

The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawing and the following detailed description.

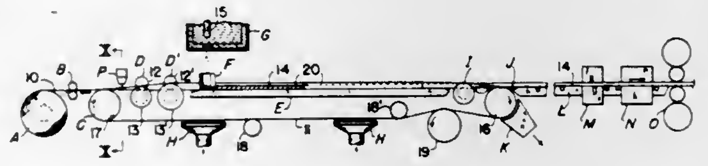
3,703,204
INTEGRATED IN-LINE METHOD OF CONTINUOUSLY CASTING METAL

David W. Brownstein, 5437 Ellsworth Avenue, Pittsburgh, Pa.

Filed Oct. 27, 1970, Ser. No. 84,341

Int. Cl. B22d *11/06*

U.S. Cl. 164—87 **12 Claims**



Direct casting of molten metal such as steel is accomplished by forming a trough-shaped mold or mold liner of ablative material and by advancing it forwardly past a molten metal feed station and along a casting line. The shaped material is charred with the molten metal and is employed in its charred condition as an immediate trough shaped mold or mold surface for the molten metal being cast. External means is employed for supporting the charred mold-shaped ablative and advancing it horizontally forwardly with the metal being cast therein.

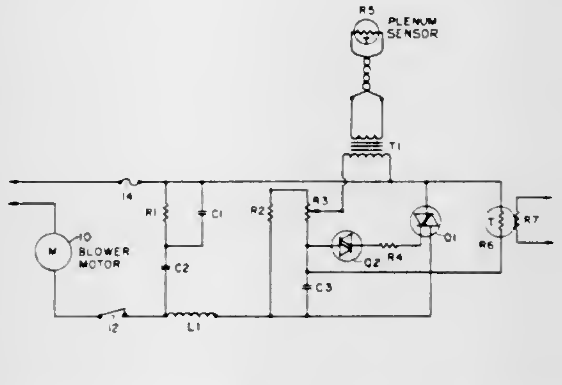
3,703,205
BLOWER-SPEED REGULATOR FOR FORCED-AIR HEATING SYSTEMS

James A. Verden, 315 South Evanston Avenue, Arlington Heights, Ill.

Filed May 15, 1970, Ser. No. 37,545

Int. Cl. F25b *29/00*

U.S. Cl. 165—26 **2 Claims**



Blower speed is modulated in accordance with plenum temperature by a circuit employing a thermistor transformer-coupled to a semi-conductor power-control circuit regulating power input to the blower motor of a warm-air furnace. The thermistor speed modulation is automatically disabled when the blower is employed for air-conditioning.

3,703,206
THERMAL REGENERATORS

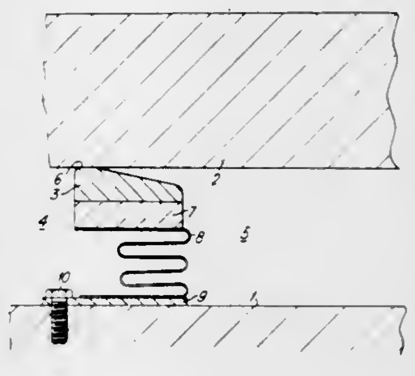
Mark Cary Sedgwick Barnard, Kenilworth, England, assignor to Leyland Gas Turbines Limited, Solihull, England

Filed July 6, 1971, Ser. No. 159,925

Claims priority, application Great Britain, Aug. 15, 1970, 39461/70

Int. Cl. F28d *19/04*

U.S. Cl. 165—9 **3 Claims**



A thermal regenerator of the kind having a rotary disc-type matrix enclosed in a casing traversed by two segregated flows of gaseous heat-exchanging fluids is equipped with an annular flexibly mounted counterface sealing element which makes rubbing contact with the corresponding face of the matrix, and which, in cross-section, has an asymmetric profile tapering from maximum thickness adjacent to the high-pressure side of the sealing element to minimum thickness at the low-pressure side.

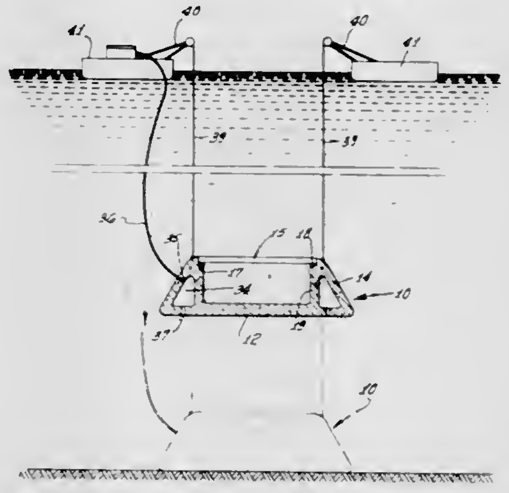
3,703,207
SUBSEA BUNKER CONSTRUCTION

Edward E. Horton, Portuguese Bend, Calif., assignor to Deep Oil Technology, Inc., Long Beach, Calif.

Filed July 29, 1970, Ser. No. 59,055

Int. Cl. E21b *7/12*

U.S. Cl. 166—.5 **8 Claims**



A protective, oil leak sensitive, subsea well bunker and template construction adapted to be floated, carried, barged or transported to a proposed well site and lowered to a sea floor without special equipment. The bunker construction provides an enclosed chamber for well equipment, the well chamber being adapted to be filled with liquid for maintaining subsurface ambient pressures, and treated for reducing and inhibiting marine life and corrosion, and to provide a selected environment within the well chamber different than the environmental conditions without the chamber to facilitate and enhance working and service conditions within the chamber. The bunker construction includes means for sensing the presence and absence of oil in the chamber.

3,703,208
REDUCTION OF RADIOACTIVE GAS CONTAMINATION OF NUCLEAR DETONATIONS IN GEOLOGICAL FORMATIONS

Richard A. Heckman, Castro Valley, and John O. Cowles, Livermore, both of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Jan. 22, 1971, Ser. No. 108,976

Int. Cl. E21b *43/00*

U.S. Cl. 166—247 **7 Claims**

Oxidizing agents are disposed circumjacent to a nuclear explosive device detonated in a geological formation, generally a carbonaceous or petroliferous formation, to provide a more oxidizing environment thereabout. Upon detonation of the device reductants present in the formation as well as in emplacement components are oxidized. Consequently tritium produced by the detonation together with any hydrogen gas present tends to be oxidized to form a tritiated water product. The water combines with inorganic materials in the vicinity of the detonation and is immobilized or falls to the bottom of the detonation produced cavity so as to minimize the tritium content of organic materials evolved by the formation.

3,703,209
ADJUSTABLE BOOT TYPE COMPOSITION HORSESHOE

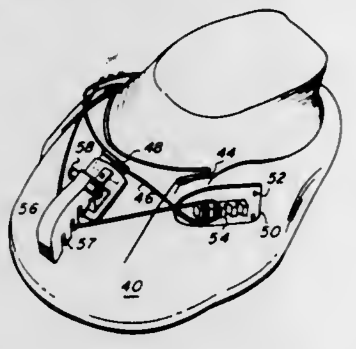
Neel W. Glass, Los Alamos, N. Mex., assignor to Les-Kare, Inc., Pajarito Acres, N. Mex.

Filed Nov. 27, 1970, Ser. No. 93,119

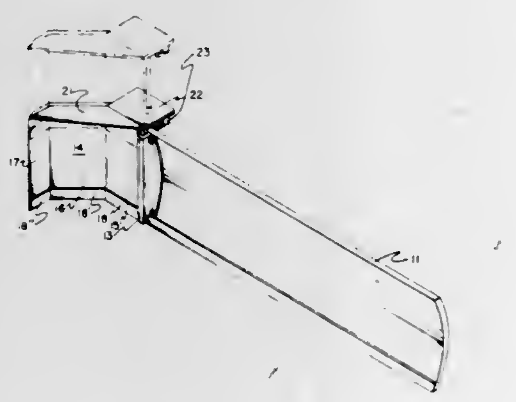
Int. Cl. A01l *3/00, 5/00*

U.S. Cl. 168—18 **4 Claims**

A molded composition boot type horseshoe having a tread portion shaped to cover the entire bottom of a horse's hoof and a flexible upwardly extending envelope portion shaped to conform to the lateral walls of a horse's hoof and having a pair of triangular folds in the front portion to provide contractual flexibility, and an adjustable tensioning member being a continuous flexible cable which is fastened at the ends to opposite sides of the upper part of the envelope portion and an over center tensioning means secured to the front part of the envelope portion for engagement with the flexible cable for snugging the shoe securely to the downwardly expanding portion of the hoof whereby the horseshoe is firmly urged upward and affixed to the hoof by distributed pressure against the aforesaid downward expanding portions of the hoof, the back of the horse's foot and the sole of the hoof.



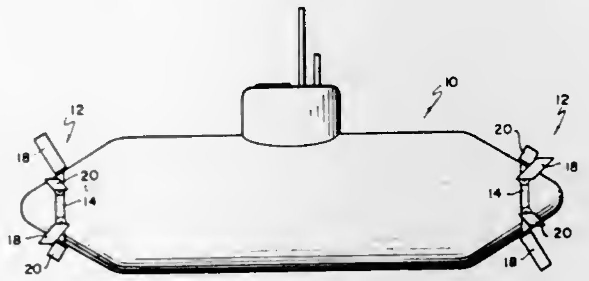
3,703,210
MOLD BOARD MATERIALS GATE FOR MOTOR PATROLS
Ray J. Williams, deceased, late of Route 3, P.O. Box 74C, Moscow, Idaho (by Marion Williams, administratrix), and Raymond R. Miller, Route 3, P.O. Box 74C, Moscow, Idaho
Filed June 28, 1971, Ser. No. 157,142
Int. Cl. E02f *3/12;* **E01h** *5/00*
U.S. Cl. 172—784 **4 Claims**



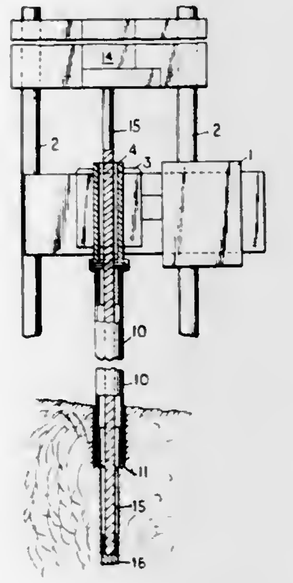
The invention comprises a substantially hook-like materials gate including a moldboard wall, a collector wall and materials wall disposed distally at one of the terminal ends on the materials engaging side of a moldboard of a commonly known motor patrol, and a materials diverter carried between the moldboard and the moldboard wall of the materials gate. The materials gate may be operable to be selectively raised and lowered relative to the moldboard of the motor patrol in response to fluid or air under pressure supplied from a suitable source by means such as hydraulic or pneumatic cylinders.

3,703,211
PROPELLER WITH AFTER-COLLISION PROPULSION CAPABILITY
Henry J. Bernaerts, Amberley, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Dec. 31, 1970, Ser. No. 103,232
Int. Cl. B63h *5/18*
U.S. Cl. 115—34 R **2 Claims**

A propeller with two complete sets of blades on the same hub. One set has long blades, the other short, so that in the event of collision with an object the longer blades will be the first to suffer damage thereby leaving the shorter blades undamaged and able to propel the vehicle.



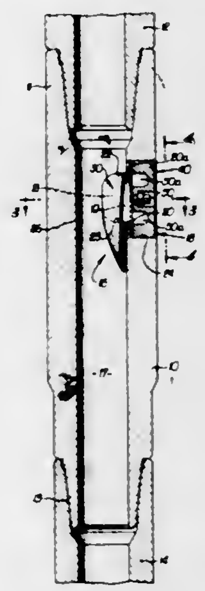
3,703,212
METHOD OF ROCK DRILLING AND APPARATUS FOR USE THEREIN
Joseph L. Abrahams, Barrhead, Scotland, assignor to Rock Fall Company Limited, Barrhead, Scotland
Filed Oct. 13, 1969, Ser. No. 865,866
Int. Cl. E21b *1/02, 3/02, 17/02*
U.S. Cl. 175—173 **3 Claims**



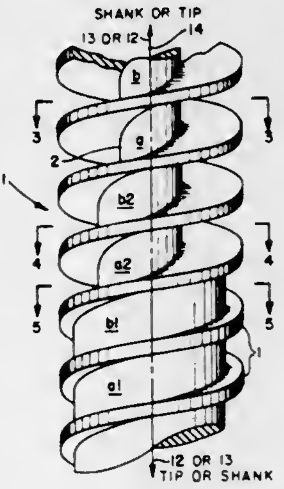
Method and apparatus for drilling overburden covered rock which may or may not be submerged. The apparatus comprising a first drilling machine having a rotary drill head with a hollow drive spindle to which is connected a sectional cylindrical outer casing having a ring bit at its free end. The hollow drive spindle being located between a pair of vertically disposed parallel guide members for axial movement therebetween. A second drilling machine independently operable and having a drill string mounted to the drilling machine above the hollow drive spindle and co-axial therewith so that the drill string can be put down through the hollow drive spindle and outer casing to drill bed rock.

3,703,213
MUD SAVER APPARATUS
Archer W. Kammerer, Jr., Fullerton, and Gary R. Johnson, Anaheim, both of Calif., assignors to Baker Oil Tools, Inc., Los Angeles, Calif.
Filed Oct. 21, 1970, Ser. No. 82,757
Int. Cl. E21b *33/00*
U.S. Cl. 175—318 **10 Claims**

Mud saver apparatus to be disposed at the lower end of a kelly adapted to be secured to a string of drill pipe and to pass through a rotary table, which can rotate the kelly, drill pipe, and bit secured thereto, for the purpose of drilling a bore hole in a formation while drilling mud is being pumped through the kelly drill pipe and bit, the apparatus including a tubular body and an elastic bladder disposed across the body passage by a gas under pressure to close the passage when drilling mud or other fluid is not being pumped through the kelly, but which is deflected to passage opening position by drilling mud pumped through the kelly and body passage at a pressure exceeding the gas pressure. Automatic closing of the body passage by the gas pressure when pumping of drilling mud ceases prevents the drilling mud from dropping out of the kelly when it is disconnected from the drill pipe therebelow.

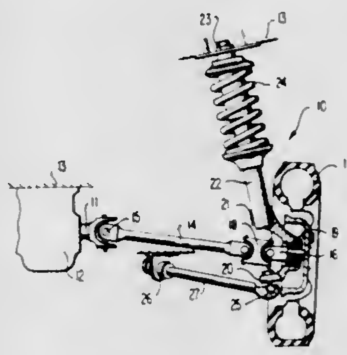


3,703,214
ROCK DRILLING BIT
Otto Boehm, Starnberg, and Werner Scholz, Soecking, both of Germany, assignors to Werkzeugbau GmbH, Starnberg, Germany
Filed March 1, 1971, Ser. No. 119,783
Claims priority, application Germany, March 26, 1970, P 20 14 870.3; Aug. 25, 1970, P 20 41 985.6
Int. Cl. E21c *13/08*
U.S. Cl. 175—395 **11 Claims**



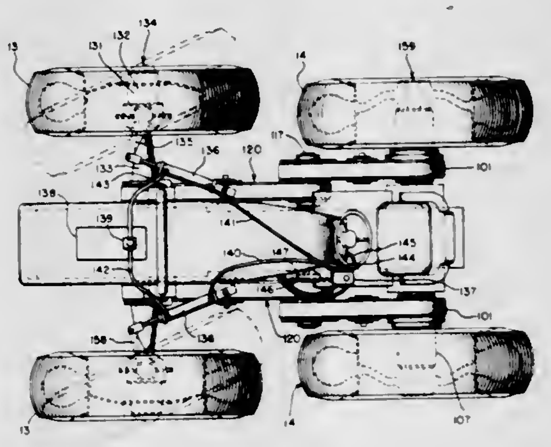
The present rock drilling bit comprises along its shaft portions of asymmetrical cross sectional areas for strengthening the drilling bit. These asymmetrical portions are distributed along and around the central axis of the shaft in such a manner that a curve which interconnects the surface centers of gravity of these portions which are located off said central axis, forms a spiral helix. These portions may be located in preferred sections of the drill bit shaft, especially in a transitionary section between the tip of the drill bit and the shaft proper or in another transitionary section between the shaft and a shank of the drilling bit.

3,703,215
INDEPENDENT FRONT SUSPENSION SYSTEM FOR A FRONT WHEEL DRIVE AUTOMOBILE
Mitsuo Takahashi, Ohta, Japan, assignor to Fuji Heavy Industries, Ltd., Tokyo, Japan
Division of Ser. No. 836,725, June 26, 1969, Pat. No. 3,642,084. This application Oct. 7, 1971, Ser. No. 187,260
Int. Cl. B60k *17/30*
U.S. Cl. 180—43 R **2 Claims**



A front wheel drive automobile has an axially non-extensible and non-contractable drive shaft connected at one end with the output shaft of a differential gear unit mounted on the vehicle body through an inboard universal joint and its other end with an axle of a wheel assembly through an outboard universal joint. A bearing housing rotatably supports the axle, a ball joint is provided on the bearing housing at a position beneath the axle and a post is connected at one end with the bearing housing ball joint and at the other end with a resilient member mounted on the vehicle body at a position rearward and inboard with respect to the ball joint and located at a position higher than that of the ball joint in the normal running state to provide a nose-down effect under vehicle acceleration.

3,703,216
TRACTOR DRIVE CONVERSION
John L. Thibodeau, Tampa, Fla., assignor to Standard Alliance Industries, Inc., Chicago, Ill.
Division of Ser. No. 811,728, April 1, 1969, Pat. No. 3,620,321. This application June 30, 1971, Ser. No. 158,359
Int. Cl. B60k *17/30*
U.S. Cl. 180—44 R **10 Claims**



There is disclosed a means to convert a conventional two wheel drive tractor to four wheel drive utilizing the original tractor power unit, the transmission-differential and the frame comprising two walking beam frame assemblies connected to the original rear drive axle, each housing a sprocket for a front wheel, a sprocket for a rear wheel, a means to drive these wheels, and a chain to take the power from the drive means and transfer it to the wheel sprockets. The drive sprocket is connected to the tractor rear axle transmission-differential on each side of the tractor so that the power from the tractor is transmitted to the front and rear wheel sprockets by the continuous chain. A ball joint is added to each wheel which is connected to the wheel sprocket in the frame, a hydraulic cylinder is connected to each ball joint with a steering arm allowing the wheel to be steered hydraulically. A vertical hydraulic cylinder is connected to a yoke which extends over the hood of the tractor allowing the power unit to be raised or lowered hydraulically without affecting the plane of the four wheels of the tractor and acting as an oscillator on the front wheels.

3,703,217

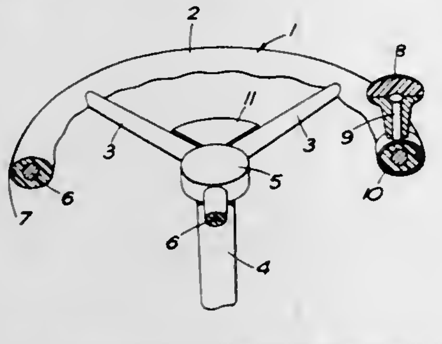
VEHICLE WITH MANUALLY OPERATED STEERING SYSTEM

Bruno Kulick, Bobenheim/Roxheim, and Karlheinz Lamneck, Beindersheim, both of Germany, assignors to Lansing Bagnall Limited, Basingstoke, England

Filed Oct. 7, 1970, Ser. No. 78,649

Int. Cl. G08b *21/00*

U.S. Cl. 180—99 **7 Claims**



A vehicle has a manually operated steering system controlled by a steering handle, there being mounted on the steering handle an operating element which, in the event of a sudden disability of the driver, effects operation of a shutting-down system on the vehicle. The operating element comprises an electrical conductor mounted on the steering handle and functioning as a capacitive transmitter which constitutes the active capacitance in a capacitive bridge circuit for detecting a change in the effective capacitance of the capacitive transmitter, according to whether or not a driver's hand is on the steering handle. The bridge circuit operates a relay which switches off the vehicle circuits and also controls an hydraulic ram assembly which acts on a brake when the relay is operated.

3,703,218

RESCUING DEVICE

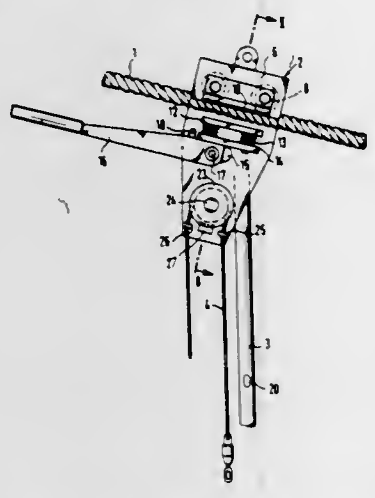
Otto Brda, 10 Breitenau, D-8112 Bad Kohlgrub, Germany

Filed June 28, 1971, Ser. No. 157,516

Claims priority, application Germany, July 20, 1970, P 20 35 933.5

Int. Cl. A62b *1/14*

U.S. Cl. 182—6 **11 Claims**



Rescuing device for rescuing persons from the chairs of inoperative chairlifts or the like in which on a supporting member rollers are provided, against which the cable carrying the chairs is pressed by a braking plate, said braking plate being movable on the supporting member in a direction normal to the extension of the cable. On the braking plate spring means are acting, which can be compressed by an adjustable lever. On the supporting member there is provided a cylinder, supported by a free-wheeling bearing rotatable in one direction of rotation and not rotatable in the other. A rope is wound around the outer periphery of the cylinder and to a first end of the rope a belt is connected such that a person to be rescued and sitting in the belt by its weight generates a frictional braking force between the rope and the outer periphery of the cylinder. A person participating in the rescuing operation can slide down an inclined cable to which the chairs are connected, while sitting on a transporting means connected to the supporting member and control its speed by operating the adjustable lever.

3,703,219

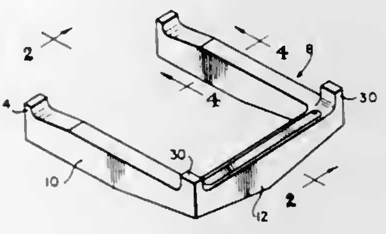
MANHOLE LADDER STEP UNIT

David P. Jones, Indianapolis, Ind., assignor to Construction Products Corporation, Indianapolis, Ind.

Filed March 16, 1971, Ser. No. 124,679

Int. Cl. E06c *9/04*

U.S. Cl. 182—46 **8 Claims**



A non-metallic manhole ladder step unit of high-strength plastic molding composition, having spaced cantilevered side beams to be embedded in a wall and a cross beam to form a ladder step. High strength and good molding characteristics are obtained by forming the beams with longitudinal walls which are vertically deep but transversely thin, joined in an inverted-U or other mutually reinforcing relation. For best characteristics, a thermosetting molding composition is used, containing at least 20 percent and preferably 30 to 50 percent reinforcing glass fiber, 25 to 60 percent mineral filler, preferably hydrated alumina, and 20 to 50 percent thermosetting resin, such as polyester or epoxy resin. Thermoplastic compositions, especially high temperature compositions containing glass fiber reinforcement, may also be used when lower strength and flame characteristics are acceptable.

3,703,220

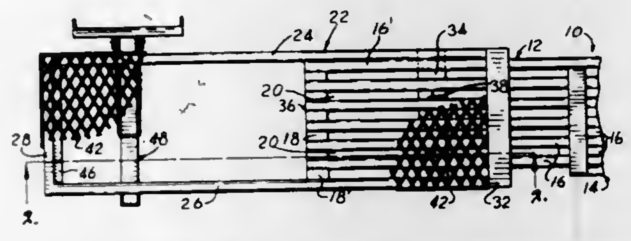
EXTENDER ASSEMBLY FOR EXTENSION PLANKS

Charles P. Williams, and William K. Williams, both of P. O. Box 48, Golden City, Mo.

Filed Nov. 11, 1971, Ser. No. 197,731

Int. Cl. E04g *5/08*

U.S. Cl. 182—223 **8 Claims**



A longitudinal extender assembly for telescoping slatted extension planks which have a plurality of transversely spaced, longitudinal members. The extender assembly includes a U-shaped frame having sidebars fitting alongside the outer members of the extension plank, and top and bottom transverse crosspieces located at the open end of the frame. One end of the plank is insertable between the crosspieces so that the extender projects longitudinally from the plank to increase the length thereof.

ERRATUM

For Class 184—6.5 see:
Patent No. 3,703,178

3,703,221

LUBRICATION DEVICE FOR ROTATING MACHINE PARTS

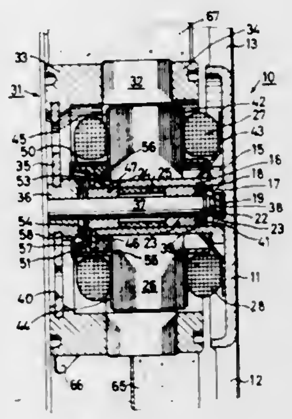
Alfred Merkle; Volker Schlicker, both of St. Georgen, and Gunter Wrobel, Villingen, all of Germany, assignors to Papst-Motoren KG, St. Georgen, Germany

Filed Dec. 24, 1970, Ser. No. 101,226

Claims priority, application Germany, Dec. 24, 1969, P 19 64 889.6

Int. Cl. F16n *31/02*

U.S. Cl. 184—6.27 **26 Claims**



Lubrication device for lubricating a rotating machine part wherein a rotatable centrifuging ring is provided for centrifuging lubricants escaping along the rotating part back toward an absorbent body which is in liquid communication with a lubricant reservoir, thus passing escaping lubricant back to the lubricant reservoir.

3,703,222

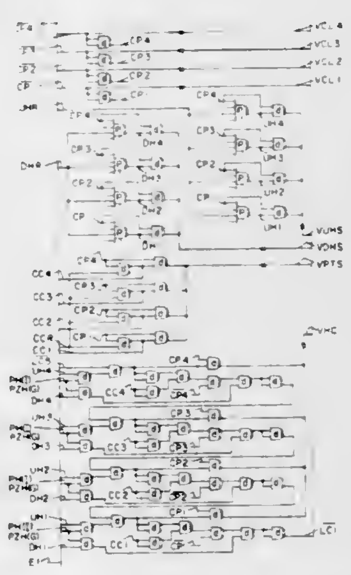
SOLID STATE CONTROL SYSTEM

John Lustl, River Vale, and John Charles Doane, Somerset, both of N.J., assignors to Otis Elevator Company, New York, N.Y.

Filed Jan. 21, 1971, Ser. No. 108,549

Int. Cl. B66b *1/18*

U.S. Cl. 187—29 R **64 Claims**



Improved solid state control systems for elevators in which the solid state components are mounted on printed circuit boards, the conductor paths of which interconnect the components of each individual board and connect them to circuit terminals which enable the connections of various components on different boards to each other. A first plurality of printed circuit boards whose components are properly interconnected provides basic control circuitry for one elevator car operating in a single car system. When appropriately connected to the control equipment associated with its car so as to receive control signals therefrom this circuitry operates in response to such signals in a predetermined manner to control its car according to a particular mode of operation. Included among the conductor paths on the circuit boards of this first plurality and connected between circuit terminals and solid state components thereof are a number of paths which are unnecessary to the operation of the basic control circuitry. These enable the connection of auxiliary equipment to the basic control circuitry which causes that circuitry to operate differently in response to the control signals it receives from the associated control equipment even though the interconnections between the components of the basic control circuitry and the connection between it and the associated control equipment remain unaltered. The printed circuit boards employed in supervisory control systems for groups of elevator cars possess a similar such universal character.

3,703,223

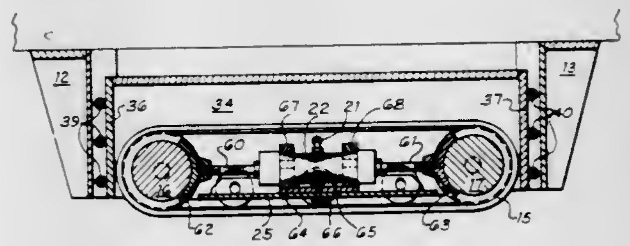
VEHICLE SECONDARY BRAKING SYSTEM WITH CONTINUOUS BELT

Alexander G. P. McInnes, Indianapolis, Ind., assignor to International Research & Development Corporation, Indianapolis, Ind.

Filed Oct. 2, 1970, Ser. No. 77,576

Int. Cl. B60t *1/14*

U.S. Cl. 188—5 **4 Claims**



A secondary braking system for a vehicle having a continuous belt directly engageable with the ground or pavement. Two brackets fixed to the vehicle frame slidingly engage a carrier body suspended from the frame and vertically movable by hydraulic cylinder motors. The continuous belt is engaged on two drums rotatably mounted to the carrier. Complementary serrations are provided on the two drums and the interior belt surface. A mounting plate fastened to the carrier between the top and bottom portions of the belt supports a master brake cylinder having double piston rods with brake shoes engageable with a smooth portion of each serrated drum.

3,703,224

FRICTION MECHANISMS CONTAINING SILICON NITRIDE

Horace A. Bray, Coventry, England, assignor to The Dunlop Company Limited, London, England

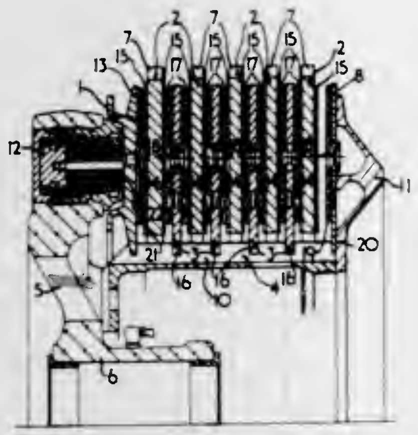
Filed Feb. 27, 1970, Ser. No. 15,144

Claims priority, application Great Britain, March 6, 1969, 11,904/69

Int. Cl. F16d *69/02*

U.S. Cl. 188—251 M **5 Claims**

A friction mechanism comprising an assembly of two relatively rotatable friction members, wherein the engaging surfaces of both friction members are provided with a sintered friction material, at least one of the friction members containing silicon nitride as a constituent. The friction material may



also contain graphite and other friction and wear modifying agents such as molybdenum disulphide tin and lead, of which the following is a specification.

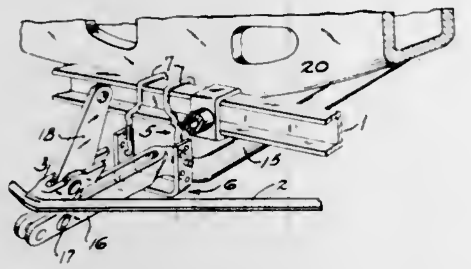
3,703,225
RAILWAY BRAKE GEAR BOTTOM ROD GUARD

Irvin J. Spaeth, Chicago, Ill., assignor to Evans Products Company, Plymouth, Mich.

Filed Dec. 28, 1970, Ser. No. 101,551

Int. Cl. B61h *13/38*

U.S. Cl. 188—210 **10 Claims**



A safety guard for supporting a railway brake gear bottom rod in the event of failure of its normal support. The guard is made in two pieces readily assembled and disassembled to facilitate its application to and removal from a brake beam.

3,703,226
SHIFTABLE FRICTION CLUTCH

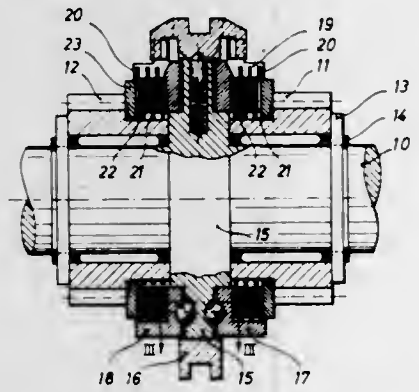
Richard Strehler, Unterfohring; Hans Eichinger, and Julius Hubl, both of Munich, all of Germany, assignors to Carl Hurtl, Maschinen-und Zahnradfabrik, Munich, Germany

Filed Feb. 8, 1971, Ser. No. 113,505

Claims priority, application Germany, Sept. 14, 1970, P 20 45 383.2

Int. Cl. F16d *21/06, 13/42*

U.S. Cl. 192—48.91 **17 Claims**



Friction clutch means including interleaved compressible friction plates and selectively operable means effecting compression thereof. One aspect of the invention relates to the means utilizing torque generated between the parts to be clutched for providing the compression force to be applied to the plates. Ball and ramp means are provided between driving and driven parts responding to torque initially applied to the driving member for generating an axial force which is then applied to the plate compressing means. Torque limiting means are provided in the force train to prevent transmission of excessive torques. Positive means are provided for preventing relative movement of the pressure generating parts when the clutch is in the disengaged condition whereby to insure against a tendency for a residual compression force to be applied during idling conditions.

Another aspect of the invention relates to means for shifting the shift collar. Here an eccentric is provided between the arms of a U-shaped yoke, said yoke being connected conventionally to the shift collar. Said eccentric has two pressure points, one on a relatively short radius for bearing against one side of said yoke and a second on a longer radius for bearing against the same side of said yoke upon further rotation of the eccentric. Thus, engagement of the eccentric starts with a smaller radius arm for application of greater force to the yoke and subsequently engages at a larger radius for more rapid movement thereof.

3,703,227
ELECTROMAGNETIC CLUTCH

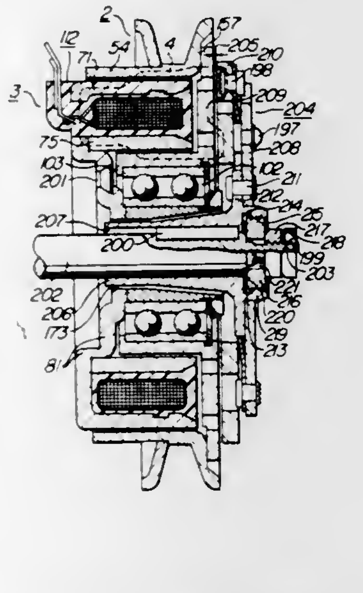
Tadao Murakami, Katsuta; Ken Kikuchi; Riyouzou Tomozaki, both of Hitachi, and Yasushi Ohuchi, Ibaraki-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 27, 1971, Ser. No. 110,032

Claims priority, application Japan, Jan. 30, 1970, 45/8230

Int. Cl. F16d *27/06, 27/10*

U.S. Cl. 192—84 C **5 Claims**



An electromagnetic clutch comprising a rotor having a belt-receiving groove for receiving the driving force from a prime mover, a magnetic circuit and a conductive plate; a stator having electromagnetic means disposed therein; and a clutch disc mounted on a rotary shaft of a rotary machine or the like; wherein said rotor is connected to the stator through a ball bearing, and said rotor and said stator in the assembled state have a through-hole formed therein for receiving the rotary shaft and further the armature plate of said clutch disc and said conductive plate are axially arranged with a slight gap therebetween, said rotor and said stator respectively being made up of a plurality of constituent elements including pressed elements and short pipes which are united together at their contacting surfaces by friction welding.

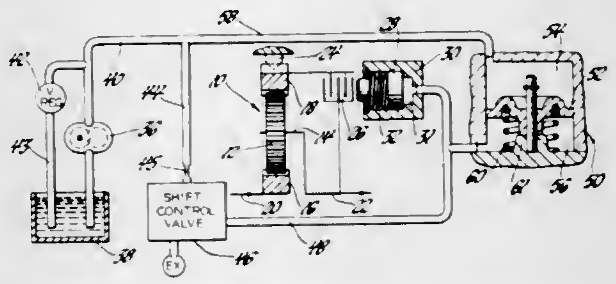
3,703,228
ACCUMULATOR FOR HYDRAULICALLY OPERATED FRICTION CLUTCH OR BRAKE UNIT

Howard E. Chana, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 17, 1970, Ser. No. 73,127

Int. Cl. F16d *25/00*

U.S. Cl. 192—85 R **2 Claims**



The accumulator, disposed in parallel relationship to the hydraulically operated servo for operating a friction clutch or brake unit, has a double rate accumulator spring which controls the stroke of the accumulator piston operating against the opposing force of a predetermined pressure equivalent to line pressure. With this construction the servo apply force is calibrated to produce smooth shifts in the transmission with the tailored and cushioned engagement of the friction unit.

3,703,229
COIN-OPERATED VENDING MACHINES

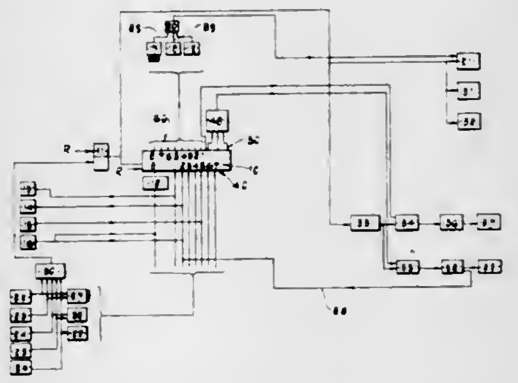
David John Bowring, Wolverhampton, England, assignor to G.K.N. Sankey Limited, Bilston, Stafford County, England

Filed Dec. 8, 1970, Ser. No. 96,222

Claims priority, application Great Britain, Dec. 10, 1969, 60,205/69

Int. Cl. G07f *11/00*

U.S. Cl. 194—10 **10 Claims**



A coin-operated vending machine includes a multi-stage binary counter for totalizing the value of coinage inserted into the machine. Numerical outputs of the counter are connected to price setting switches for determining the prices at which commodities are to be vended and the totalized value of coinage inserted is registered by the numerical outputs. Change is given when the value of the inserted coinage exceeds that of the selected commodity.

3,703,230
TYPEHEAD SETTING DEVICE

Horst Dieter Glave, Wilhelmshaven, Germany, assignor to Olympia Werke AG, Wilhelmshaven, Germany

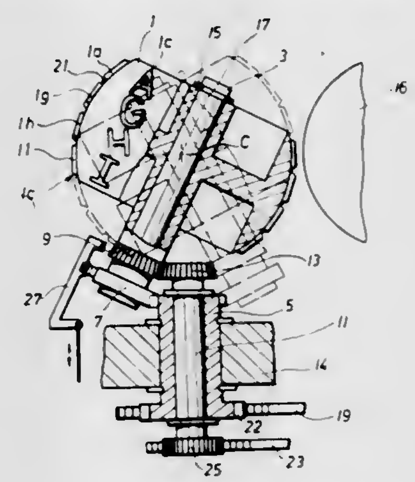
Filed April 13, 1971, Ser. No. 133,625

Claims priority, application Germany, April 21, 1970, P 20 19 013.0

Int. Cl. B41j *1/60*

U.S. Cl. 197—52 **12 Claims**

A spherical type head is mounted on a supporting shaft for rotation about a first axis, and the supporting shaft is rotated by line selector means about a second axis intersecting with the first axis at the center of the spherical typehead so that the typehead performs a wobbling motion for placing a selected



circular line of types in an operative position. Column selector means are connected by bevel gears with the typehead and rotate it about the first axis to place a selected column and type in an operative position confronting a platen.

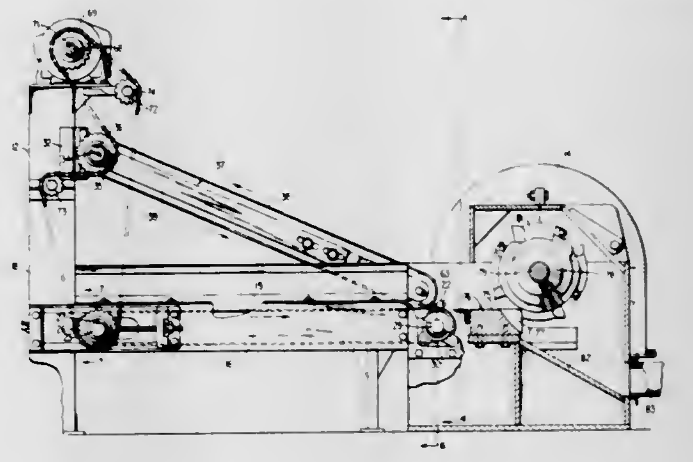
3,703,231
MATERIAL FEEDING APPARATUS

William T. S. Montgomery, Jr., Jacksonville, Fla., assignor to Montgomery Industries International, Inc., Jacksonville, Fla.

Filed Nov. 23, 1970, Ser. No. 91,714

Int. Cl. B65g *15/14*

U.S. Cl. 198—165 **8 Claims**



Apparatus for conveying and feeding pieces of wood or bulky items such as paper and cardboard boxes or the like to a cutting and punching type reduction device comprises a generally horizontal lower wide belt unit and a plurality of narrow upper belt units converging inwardly from a feed opening into that device. The belts define respective upper and lower sides of a feed passage moving in the same direction at the same speed. The narrow upper belt units are freely rockable about a common axis and all rest at their inner ends on the end of the wide belt adjacent the cutting and punching device.

3,703,232
CONTAINER ORIENTING APPARATUS

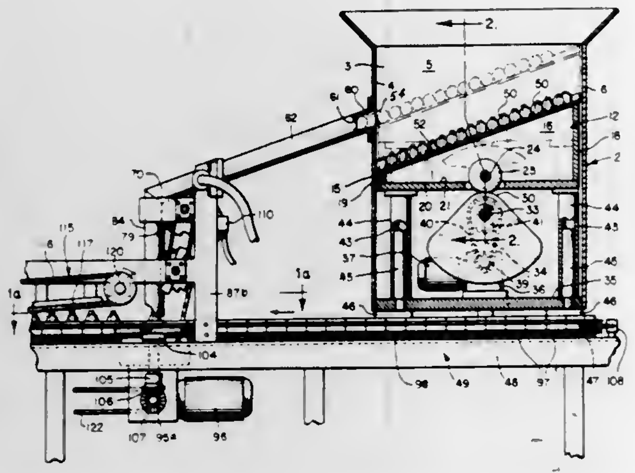
Stanley J. Zbiegien, 5014 West Diversey Avenue, Chicago, Ill.

Filed Oct. 19, 1970, Ser. No. 81,650

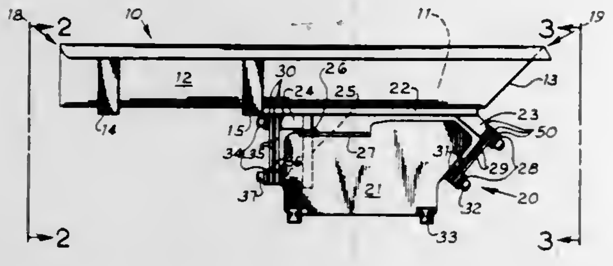
Int. Cl. B65g *47/24*

U.S. Cl. 198—33 AD **10 Claims**

Apparatus for positioning containers upright from a disoriented pile in a hopper. A divider ramp with an inclined upper groove picks up a row of containers which orient with their major axes lengthwise of the groove. The containers slide downwardly endwise into an orienting tube which provides a pair of inclined transversely displaced surfaces spaced less than the maximum width of the containers and between which each container tumbles over upside down in upright position with its center of gravity below the axis of rotation. Each container as it tumbles once or slides down the spaced surfaces enters a pocket in a metering wheel extending between the surfaces. The wheel deposits each container in upright position into a vertical tube to a second metering wheel which deposits the container into a holder indexed therebeneath by a conveyor.



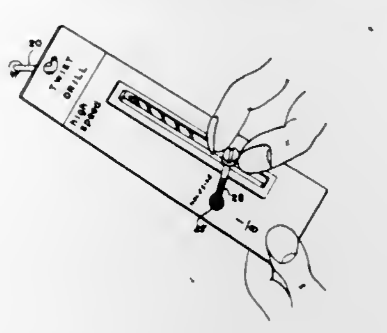
3,703,233
VIBRATORY FEEDING APPARATUS
Harold R. Hacker, 522 Woodview Drive, Noblesville, Ind.
Filed Feb. 8, 1971, Ser. No. 113,578
Int. Cl. B65g *27/24*
U.S. Cl. 198—220 DC **7 Claims**



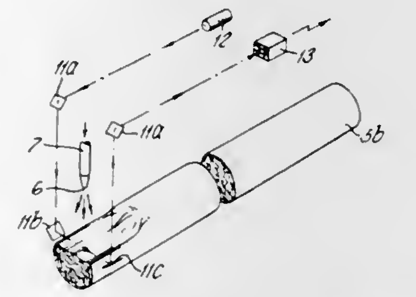
An apparatus for feeding items in a given direction through the use of controlled vibratory motion. An open ended chute is mounted above a base in spaced relation. An armature fixed to the chute extends into the base and is vibrated by an electromagnet mounted within the base. The chute is mounted above the base by a first and second stack of leaf springs. The first stack of leaf springs is arranged vertically so as to be perpendicular to the chute. The second stack is arranged obliquely with respect to the first stack of leaf springs. A cover plate is mounted to the base enclosing the electromagnet and a rubber grommet mounted to the base is in sealing relationship with the armature. Rubber feet are mounted beneath and to the base.

3,703,234
DISPLAY PACKAGES FOR DRILLS, BITS AND SIMILAR BORING TOOLS, PROVIDING MEANS TO TEST IF PROPER SIZE FOR A GIVEN BOLT, SCREW OR DOWEL
Joel A. Howard, Cliffside, N.J., assignor to Howard Hardware Products Inc., Bloomfield, N.J.
Filed July 27, 2970, Ser. No. 58,360
Int. Cl. B65d *73/00;* **G01b** *3/36*
U.S. Cl. 206—78 B **2 Claims**

A drill bubble-packaged on a card having a punched hole exactly the size the tool will bore. The card has a coating in the form of a flat ring around the hole; such ring being of a contrasting color and may be printed or constitute an adhered hole-reinforcement washer.

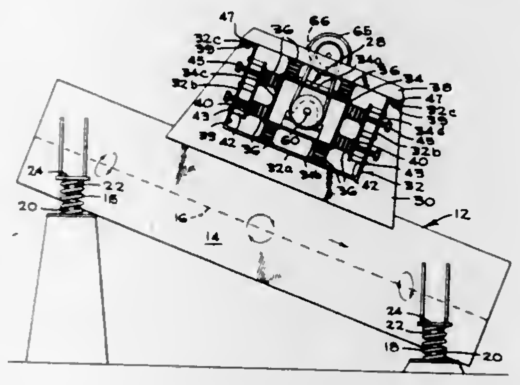


3,703,235
CIGARETTE TESTING APPARATUS
John McEnery, London, England, assignor to Molins Machine Company Limited, London, England
Filed Dec. 8, 1970, Ser. No. 96,188
Int. Cl. B07c *3/10*
U.S. Cl. 209—79 **14 Claims**



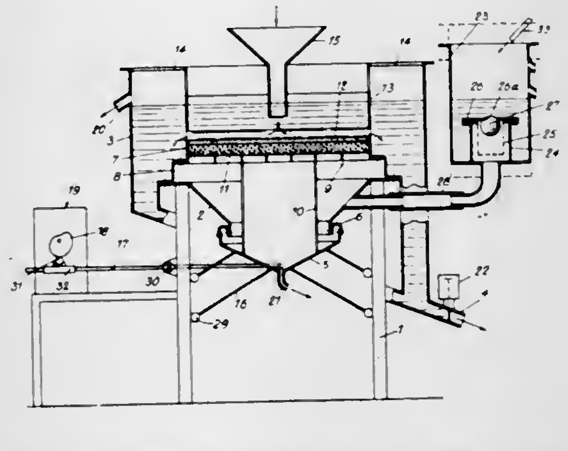
Apparatus for testing the tobacco ends of cigarettes comprises means for compressing the cigarette ends sideways by means of compressed air. The degree of compression produced by the air may be monitored for example by using a light beam which can pass by the cigarette end only when the end is soft, or by using a fluidics device for detecting the extent to which the cigarette end restricts the out-flow of air.

3,703,236
VIBRATOR MOUNTING
William V. Spurlin, and Patrick J. Carroll, both of Indiana, Pa., assignors to FMC Corporation, San Jose, Calif.
Filed July 31, 1970, Ser. No. 59,975
Int. Cl. B07b *1/34*
U.S. Cl. 209—326 **16 Claims**



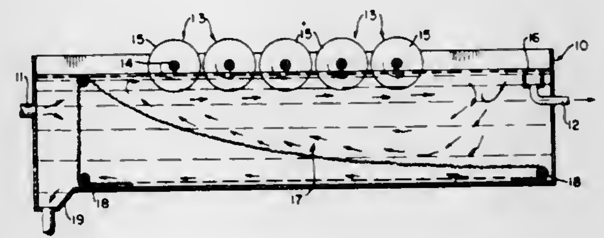
A mounting for a rotary vibrator exciter for a two mass vibratory system wherein the rotary vibrator is mounted within a rectangular tubular frame which is connected to the structure to be vibrated by means of elastomeric blocks positioned on both of the horizontal and the vertical sides of the frame. By variation of the number, sizes, placement or compression of the elastomeric blocks the transmitted vibratory force component in the vertical and horizontal directions can be independently adjusted in order to obtain the desired vibratory motion in the vibrated structure and the desired natural frequency of vibration of the vibratory system.

3,703,237
DIFFERENTIAL-EFFECT BACKING VAT FOR COARSE AND FINE PARTICLES
Richard Cohen-Alloro, Orleans; Roger Cuvillier, Nanterre, and Jean Grassaud, Orleans, all of France, assignors to Bureau De Recherches Geologiques Et Minieres, Paris, France
Filed Jan. 7, 1971, Ser. No. 104,617
Claims priority, application France, Jan. 7, 1970, 7000396
Int. Cl. B03b *3/22*
U.S. Cl. 209—426 **6 Claims**



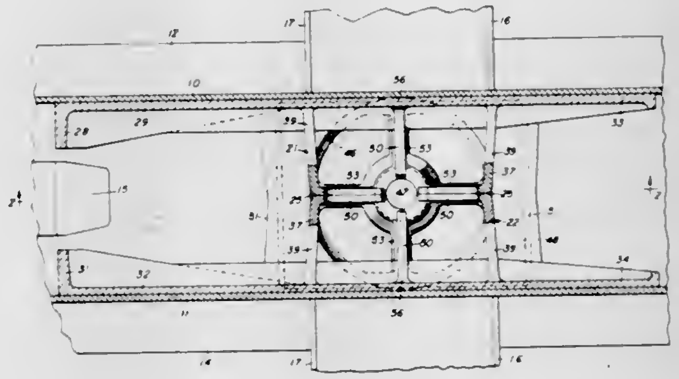
A method and apparatus for gravimetrically separating particles of different sizes and densities. A conical, liquid filled vat is closed at its smaller bottom opening by a rigid, flexibly mounted diaphragm and at its larger top opening by a flexibly mounted filter bed having a permeable bottom. The diaphragm and bed are rigidly connected and reciprocably driven along a vertical axis. The differential liquid flow promotes the migration of denser particles through the bed and into the vat.

3,703,238
APPARATUS FOR THE BIOLOGICAL TREATMENT OF WASTEWATER
Wilbur N. Torpey, 4923 Hanford Street, Douglaston, N.Y.
Division of Ser. No. 781,452, Dec. 5, 1968, Pat. No. 3,575,849. This application March 1, 1971, Ser. No. 122,618
Int. Cl. C02c *1/10*
U.S. Cl. 210—151 **30 Claims**



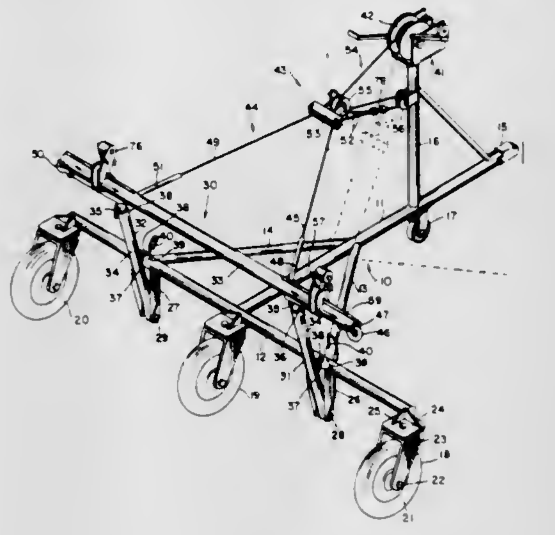
Method and apparatus for substantially upgrading the operating efficiency of wastewater treatment plants is disclosed. The invention utilizes forcibly rotating bodies that are partially submerged in the wastewater to provide surface area on which biological slimes develop and serve the purpose of removing pollutants from the wastewater. The rotating, partially submerged bodies are located in the upper portion of the treatment tanks, and, in addition to providing oxygen and nutrients for the growth and maintenance of biological slimes, serve to pump the wastewater to bring it in contact with the slimes.

3,703,239
CENTER BRACE FILTER AND CENTER PLATE ASSEMBLY
Loree Elwyn Furniss, Casa Grande, Ariz., assignor to The Buckeye Steel Castings Company, Columbus, Ohio
Filed Dec. 15, 1970, Ser. No. 98,243
Int. Cl. B61f *1/14, 5/16;* **B61g** *7/10*
U.S. Cl. 213—57 **5 Claims**



A center brace for mounting within the center sill of a railway car in the area of the underframe over the center plate and where the body bolster intersects the center sill and to provide an improved mounting of the center plate on the center brace.

3,703,240
TOWING DOLLY
Arvin E. Russell, 430 Sandra Lane, Indianapolis, Ind.
Filed Nov. 18, 1970, Ser. No. 90,516
Int. Cl. B60p *3/12*
U.S. Cl. 214—86 A **9 Claims**

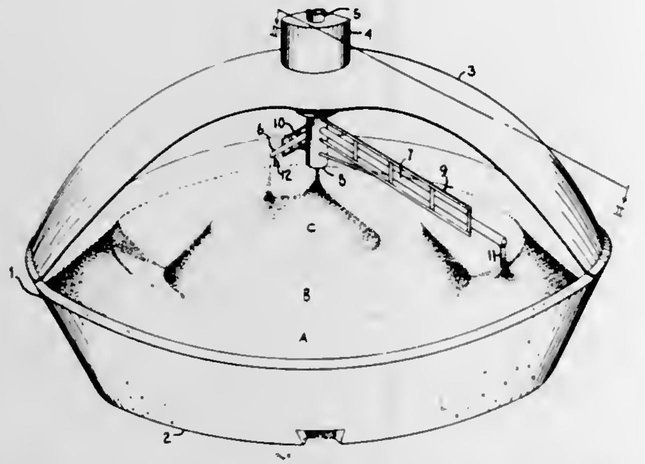


A vehicle towing dolly comprising a wheeled chassis carrying a subframe mounted on the chassis to swing between a rearwardly extending position and a generally upright position, the subframe being provided with a pair of transversely-adjustable brackets adapted to engage, and be secured to, a part of a vehicle to be towed, a winch on the chassis, and a cable arrangement wound on the winch and operatively connected to the distal region of the subframe to swing the subframe to upright position after engagement with the vehicle part, the cable arrangement being directly connectable to a part of the vehicle to be towed.

3,703,241

METHOD OF STORING PARTICULATE MATTER

Clifford J. Kelly; Regina Kelly, both of Saskatchewan, Canada, and Bernard J. Hukee, Jr., Muscatine, Iowa, assignors to Kalium Chemicals Limited, Saskatchewan, Canada
Continuation of Ser. No. 28,337, April 14, 1970, abandoned. This application Nov. 18, 1971, Ser. No. 200,038
Int. Cl. B65g *65/32*
U.S. Cl. 214—152 **12 Claims**

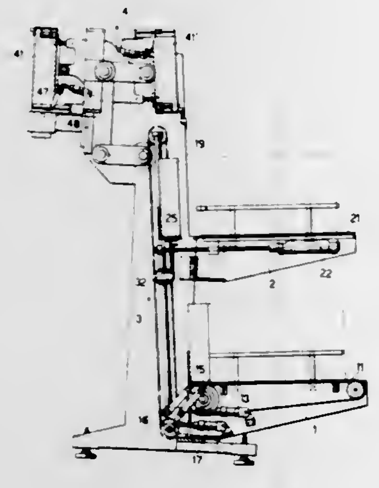


A method of storing particulate matter having a small particle size range, i.e. 2.5 to 325 mesh and which is susceptible to fracturing and breakage during handling is described. The material is stored in circular warehouses in a plurality of circumferential piles. Each circle of piled material has a different circumference and the vertical drop of the material from its entry into the warehouse to its resting place in the warehouse is minimized to avoid breakage. Uses of the method to store CKl, KaCl, CaCl$_2$ and mixed fertilizers are specifically disclosed.

3,703,242

AUTOMATIC TRAY-LOADING DEVICE FOR CIGARETTE PACKAGING MACHINES

Renato Marradi, Via del Lavaro 17, 40127 Bologna, Italy
Filed Oct. 21, 1970, Ser. No. 82,694
Claims priority, application Italy, Nov. 13, 1969, 24361 A/69
Int. Cl. B65g *65/34*
U.S. Cl. 214—302 **8 Claims**

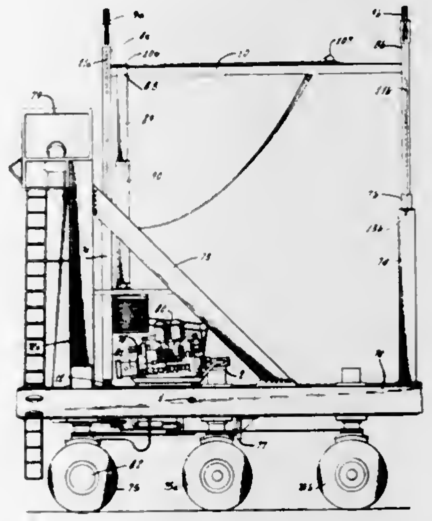


A device for automatically feeding cigarette-trays into the hopper of a cigarette packaging machine within a remarkably reduced time, having the magazine of full trays located just above the floor level and under the magazine of empty trays so as to have a direct linkage between the tray-loading device and the tray-filling machine. This tray-loading device includes on a transfer mechanism at least one pair of tiltable tray containers which operate simultaneously in order to transfer full trays over the hopper of the packaging machine and empty trays from the hopper to a lifting mechanism. The same lifting mechanism, in addition to conveying the empty trays to the proper magazine, also conveys the full trays from the magazine to the transfer mechanism. A number of pneumatic cylinders are also provided for imparting movement to the various parts of the device, these pneumatic cylinders being actuated by sensing means such as limit switches and photocells.

3,703,243

STRADDLE CARRIER

John Thomas Monk, 405 Meadow Moss Drive, Jackson, Miss.
Filed Sept. 15, 1970, Ser. No. 72,444
Int. Cl. B60p *1/02*
U.S. Cl. 214—394 **17 Claims**



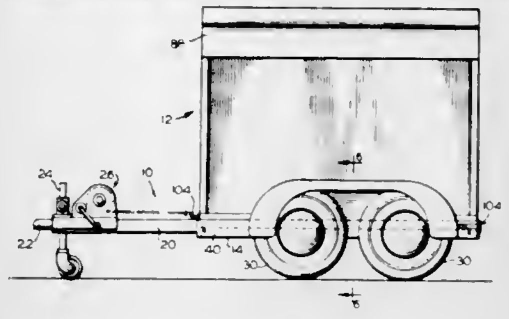
The straddle carrier has two spaced parallel elongated frame members adapted to straddle a load. A vertically disposed arch member connects the frame members together adjacent one end thereof and diagonally disposed leg members connect the tops of the arch to substantially the midpoints of the frame members. Ground wheels are flexibly mounted on the undersides of the frame members, and means for steering the wheels are provided. A rectangular load lifting beam is disposed between the frame members and arches. Means are provided engaging the four corners of the lifting beam for raising and lowering the lifting beam, means being provided at the four corners of the lifting beam for securing same to a load. Means are also provided for guiding the lifting beam during its ascent and descent. And means are provided for controlling the lifting beam raising and lowering means whereby the four corners of the beam will be simultaneously raised or lowered equal amounts notwithstanding the relative weights on the respective corners, in order to maintain the beam always parallel with the frame members.

3,703,244

TRAILER CHASSIS

David P. Walsh, and Joanne M. Walsh, both of 1400 Ramsey Drive, Edgewater, Md.
Filed Oct. 31, 1969, Ser. No. 873,001
Int. Cl. B60p *1/64*
U.S. Cl. 214—517 **11 Claims**

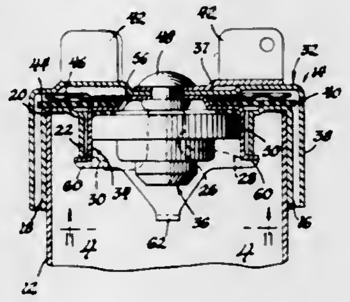
A multiple functional land trailer is provided which is adapted to receive, center and immovably hold material-receiving containers such as, shipping containers for bulk material, transporting means for animals, coach-type living or camping structures, or a plurality of material-receiving modular units and the like.



3,703,245

FILLER CAP

Robert W. Brewer, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 19, 1971, Ser. No. 173,086
Int. Cl. B65d *41/06*
U.S. Cl. 220—40 R **2 Claims**

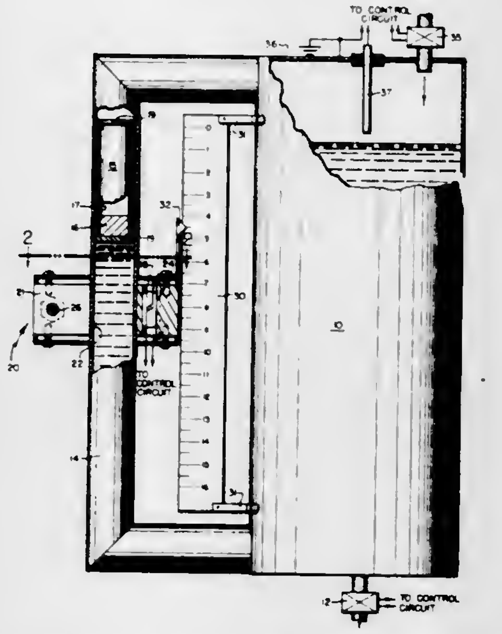


A filler cap for a motor vehicle fuel tank includes pairs of axially spaced locking and retaining tabs which successively engage the filler neck cam. When the first pair of tabs are disengaged, the second pair engage the cam to prevent direct removal of the cap and permit gradual pressure release from the tank. When the second pair of tabs are disengaged, the cap is completely removable from the filler neck.

3,703,246

LIQUID LEVEL CONTROL

John Horak, 470 Ottawa Avenue, Apt. 13C, Hasbrouck Heights, N.J.
Filed March 19, 1970, Ser. No. 20,895
Int. Cl. B07d *5/30*
U.S. Cl. 222—17 **3 Claims**

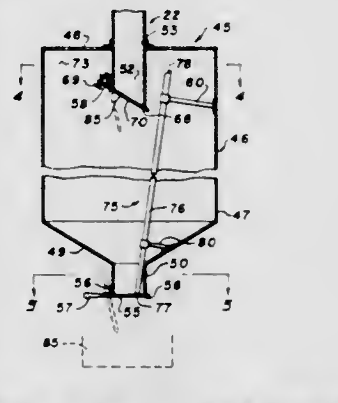


A liquid level sensing switching device comprising a magnetic float contained in a vertical channel and a magnetic reed switch positionable at calibrated levels adjacent the channel and means to dispense liquid from an associated container in quantities measured by the operation of said switch when the magnetic float drops from a predetermined level to the position of the switch.

3,703,247

GRAIN DISPENSING APPARATUS

Nykola Kostur, 1026 Brunette Avenue, New Westminster, British Columbia, Canada
Filed March 10, 1971, Ser. No. 122,705
Claims priority, application Canada, April 2, 1970, 078,932
Int. Cl. G01f *11/28*
U.S. Cl. 222—442 **4 Claims**

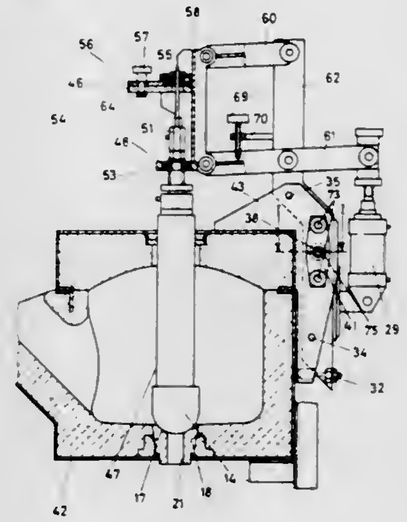


A tank connected at one end to a pipe through which granular material is delivered into the tank and into which a stream of air is drawn counter to the flow of material. The tank has a spout at the opposite end fitted with a manually controlled gate valve. A flap valve is fitted to the end of the delivery pipe within the tank. A by-pass tube extends from the spout to the upper end of the tank and the inlet end of the tube is sealed off by the gate valve in closed position. When a body of material impinges on the flap valve, this normally partially open valve is forced further open to allow the material to drop into the tank. When the gate valve is opened to empty the material from the tank, air pressure reaches the upper end of the tank through the by-pass tube and the flap valve automatically is closed to prevent some of the material from being entrained in the counterflowing air stream.

3,703,248

FOUNDRY STOPPER HAVING PARALLELOGRAM RIGGING

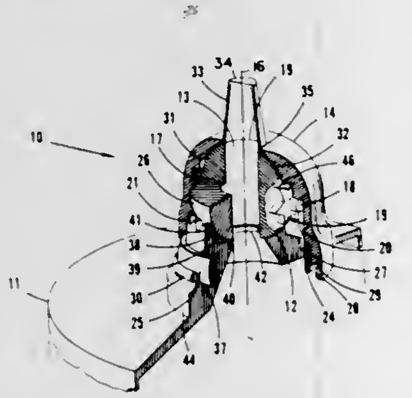
William W. Seaton, Dexter, Mich., assignor to Patusa Aktiengesellschaft, Zug, Switzerland
Filed April 21, 1971, Ser. No. 136,115
Claims priority, application Switzerland, April 27, 1970, 6248/70
Int. Cl. B22d *37/00*
U.S. Cl. 222—504 **5 Claims**



Disclosed is a guide mechanism for a stopper in a casting stopper container which allows axial alignment of the stopper with respect to the nozzle in any direction. The guiding member is in the form of a parallelogram the vertical swivel column of which is pivotally supported on flexible strips. The stopper is suspended on a flexible rod arranged in spherical bearings to allow a fine axial adjustment of the stopper.

3,703,249
ROTATABLE OPENING CONTAINER CLOSURE

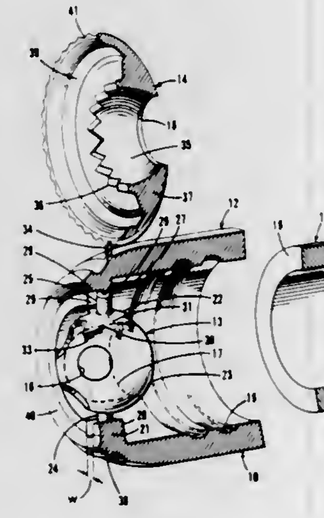
Edward Benjamin Middleton, 245 Forrest Hill Drive, Kitchener, Ontario, Canada
Filed May 8, 1970, Ser. No. 35,673
Int. Cl. B67d *3/00*
U.S. Cl. 222—507 **4 Claims**



The disclosure sets forth a container closure device utilizing a rotatable spherical valve element having a through bore supported on an orificed base and enclosed by an orificed cap which is rotated on the base and including rack and pinion means active between base and cap to actuate the valve element between open and closed positions of the bore thereof relative to the orifice of the cap.

3,703,250
CLOSURE HAVING GEARED ROTATABLE BALL VALVE

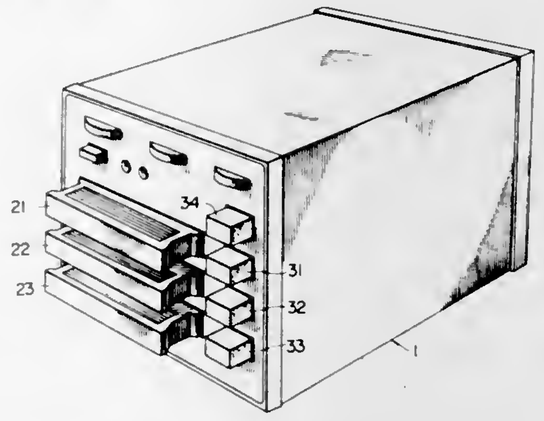
Edward B. Middleton, 245 Forrest Hill Drive, Kitchener, Ontario, Canada
Filed April 12, 1971, Ser. No. 133,180
Int. Cl. B67d *3/00*
U.S. Cl. 222—507 **9 Claims**



The specification describes a rotatable closure device for use with a container in which a rotatable ball type valve element is supported by stud shafts on a cylindrical barrel body, the latter being mountable on a spout of a container and being curroundable by a rotatable cap device carrying a rack adapted to articulate a pinion on the ball valve when turned. The valve member being adapted to deliver measured portions of container contents if desired.

3,703,251
MAGNETIC TAPE MAGAZINE PLAYING DEVICE

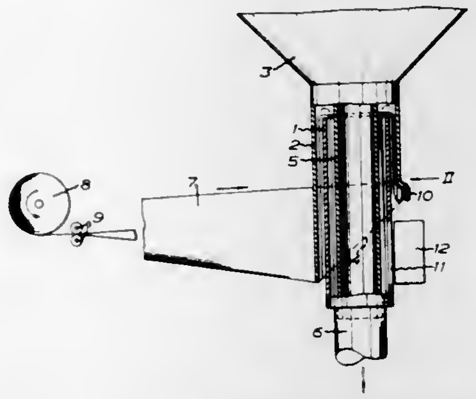
Michio Suzuki, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Dec. 29, 1970, Ser. No. 102,467
Claims priority, application Japan, Dec. 29, 1969, 44/2089
Int. Cl. G11b *15/29*
U.S. Cl. 226—90 **6 Claims**



A magnetic tape magazine playing device which has a rotatable lever having a pinch roller attached to one end thereof, an operating lever having a claw for pressing one end of the rotatable lever and constructed so that the interval between the pinch roller and a capstan is substantially the same as the stroke of the operating lever. Also, electric contacts are provided which function so that one group of electric contacts close so as to rotate only the capstan upon the former half stroke of the operating lever and the other group of electric contacts close upon the latter half stroke of the operating lever so that the pinch roller contacts the capstan substantially simultaneously upon the closure of the other electric contacts.

3,703,252
METHOD OF AND APPARATUS FOR PRODUCING A TUBING FROM A STRIP OF MATERIAL

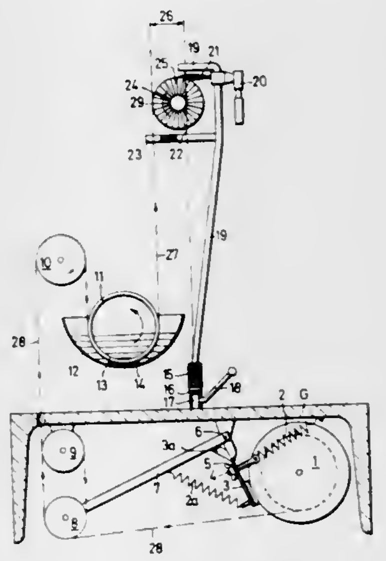
Jonnie Thor-Leif Silvandersson, Knared, Sweden, assignor to AB Akerlund & Rausing, Lund, Sweden
Filed May 18, 1970, Ser. No. 38,058
Claims priority, application Sweden, May 28, 1969, 7471/69
Int. Cl. B23k *1/20*
U.S. Cl. 228—15 **6 Claims**



Apparatus for forming continuous tubing from a strip of web-like material such as plastic and the like in which a guide tube is surrounded by a shaping tube and spaced therefrom, said shaping tube having a terminal edge oblique to the longitudinal axis thereof, so that the strip of material in the shape of a longitudinal open channel is advanced at a substantial angle to the axis of the shaping tube and is folded inwardly about the oblique terminal edge thereof so as to surround the guide tube with its longitudinal edges overlapped. The web-like material can be welded or heat sealed along the overlapping edges to form continuous tubing. Also if desired the shaped strip of material can be folded inwardly over the end of the guide tube and a filling pipe can be inserted into the tubing for admitting substances into the tubing so that packages can be formed as the continuous tubing is advanced.

3,703,253
HEAT EXCHANGER

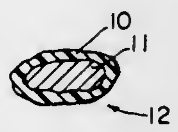
Franciscus Roffelsen, Helmond, Netherlands, assignor to Naamloze Venootschap Spiro Research N.V., Helmond, Netherlands
Filed July 20, 1970, Ser. No. 56,366
Claims priority, application Germany, July 23, 1969, P 19 37 350.3
Int. Cl. B23k *1/20*
U.S. Cl. 228—17 **5 Claims**



In apparatus for manufacturing heat exchanger having a pipe, a wire coil helically wound onto said pipe and a reinforcing edge capping wire firmly bonded to the edge of said wire helix. The pipe is rotated and axially moved by the apparatus and the capping wire is paid out by a storage drum by the action of a winding drum which dips the wire into soldering material and feeds it through a wire guide onto the wire helix.

3,703,254
PRE-FLUXED SOLDER POWDER

Theodore Maierson, Dayton; Harry L. Roe, Jr., Centerville, and James E. Williams, Kettering, all of Ohio, assignors to The National Cash Register Company, Dayton, Ohio
Filed May 7, 1970, Ser. No. 35,414
Int. Cl. B23k *3/06, 35/14*
U.S. Cl. 228—56 **6 Claims**

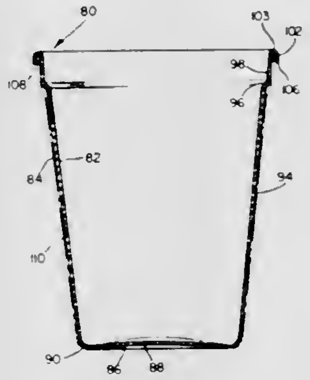


A solder powder is disclosed comprising minute particles of metallic alloy solder coated by a thin layer of rosin soldering flux such that the flux performs a triple function of: (a) insulating the individual alloy solder particles from electrical conductance; (b) adhesively holding individual particles of solder in place by virtue of the sticky characteristics of the preferred fluxes used to coat the solder powder; and (c) providing, when melted, an agent to clean substrates and workpieces to be joined by soldering.

3,703,255
PLASTIC CONTAINER HAVING EXPANDED SIDE WALL

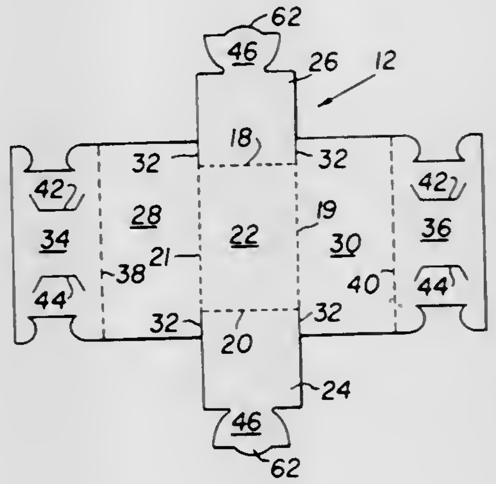
Gordon E. Wade, Glen Riddle, Pa., assignor to Scott Paper Company, Delaware County, Pa.
Filed Feb. 12, 1970, Ser. No. 10,742
Int. Cl. B65d *3/00*
U.S. Cl. 229—1.5 B **2 Claims**

A foamed, cellular thermoplastic container has a sidewall, at least a substantial portion of which is thicker and less dense than a bottom wall and lip region between which said sidewall is disposed. In a first embodiment of the invention the inner and outer surfaces defining the sidewall are uninterrupted, smooth surfaces, and in a second embodiment of the invention the inner surface of the sidewall is smooth and the outer surface is provided with alternate ridges and valleys. A process for thermoforming foamed, cellular thermoplastic containers from sheet material in which the sheet is positioned between mold members which are brought into a final forming position to define a cavity, portions of which conform to the configuration of the container to be formed, and a reduced pressure is applied to opposite sides of the sheet within the sidewall region of the mold to permit entrapped gases in the cellular structure of the sheet to expand to thereby increase the thickness and lower the density of the sidewall of the container.



3,703,256
FOLDING BOX

Donald R. Ross, 126 California Avenue, Freeport, N.Y.
Filed March 23, 1971, Ser. No. 127,273
Int. Cl. B65d *5/10*
U.S. Cl. 229—39 R **4 Claims**

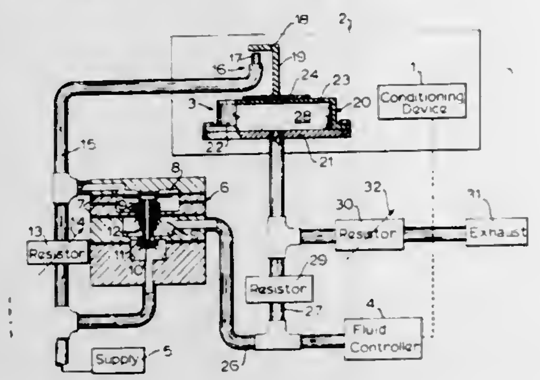


A box, foldable from a flat blank into a three-dimensional construction, which does not require an attachment of confronting walls, as by gluing, stapling or the like, as is characteristic of seamed boxes. Instead, the body of the box includes overlapping top walls which are either wrapped about erect or standing side walls and held in place by cooperating locking means on the side and top walls or otherwise held in overlapping relation. In either case, a definitive interior space or compartment is defined by the body having said overlapping walls.

3,703,257
CONDITION CONTROL SYSTEM AND INTEGRATED SENSOR AND FEEDBACK CHAMBER UNIT THEREFOR

Paul E. Thoma, Burlington, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed March 31, 1970, Ser. No. 24,307
Int. Cl. G05d *23/185*
U.S. Cl. 236—44 **7 Claims**

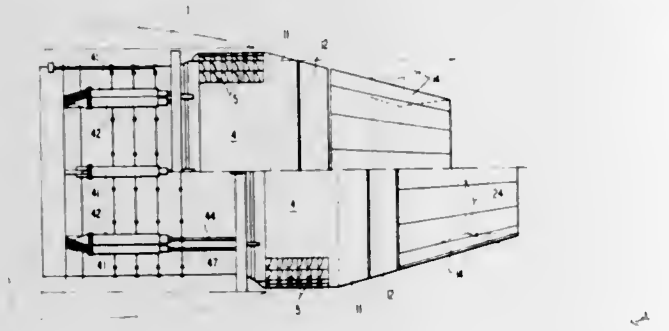


An environmental system includes a condition-sensing unit for sensing humidity or temperature. The unit includes a closed feedback chamber having an outer flexible flat wall. A material responsive to the selected environmental condition to be controlled is attached to the flexible flat wall in spaced relation to the periphery of the flat wall and defines a flexible sensor wall with a controlled deflection in response to condition changes. The flexible sensor wall is also connected to a lid overlying a control port of a pneumatic relay to adjust the control air supplied to a fluid controller for operating of a conditioning device. The control air is also connected via a resistor or the like directly to the feedback chamber to provide a related feedback signal which repositions the flexible sensor wall to establish feedback and stabilize the control loop. A variable resistor is connected to exhaust the feedback signal for adjustment of the degree of feedback pressure.

3,703,258
THRUST REVERSER UNIT

Walter Wildner, Munich, Germany, assignor to Motoren-und Turbinen-Union Munchen Gmbh, Munich, Germany

Filed Dec. 23, 1970, Ser. No. 100,889
Claims priority, application Germany, Dec. 24, 1969, P 19 64 976.4
Int. Cl. B64c *15/06*
U.S. Cl. 239—265.29 **25 Claims**

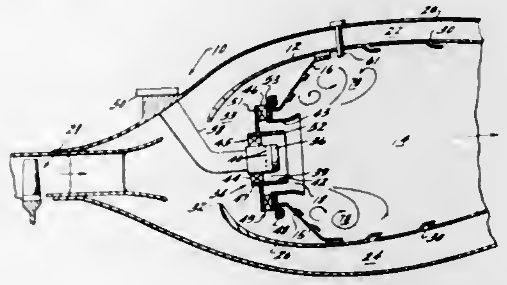


A thrust reversing device shutting-off the gas flow supplied by a turbojet engine and directing it to cascade vane assemblies extended from an engine fairing. An axially movable cylinder is provided with a variable thrust nozzle on its downstream end with recesses containing the reversing cascade vane assemblies. For an increased exhaust area, one or several tapering sections of a nozzle actuating skirt located downstream and generally following the engine fairing contour can be moved into recesses of nozzle flaps pivotable about transverse axes. For the reversing position, the cylinder with the reversing cascade vane assemblies is extended from the engine fairing over the end of the afterburner jet pipe, with the horizontal gas flow path by shut-off simultaneously by flaps of the variable thrust nozzle, which flaps are pivotable about transverse axes and form the divergent inner section of the thrust nozzle when the reversing device is in forward thrust position.

3,703,259
AIR BLAST FUEL ATOMIZER

Geoffrey John Sturgess, Swampscott; Jacob Sherman Hoffman, Peabody; John William Vdoviak, and Robert Hirschkron, both of Marblehead, all of Mass., assignors to General Electric Company

Filed May 3, 1971, Ser. No. 139,408
Int. Cl. B05b *7/10*
U.S. Cl. 239—400 **16 Claims**

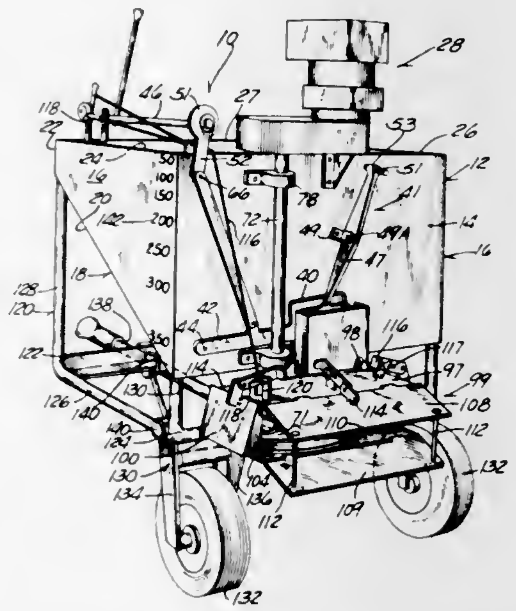


An air blast fuel atomizer for establishing a highly atomized fuel dispersion at the confluence of two counter-rotating air swirls, wherein a uniform concentration of fuel is disposed on a circumferential shroud and directed to the atomization forces at the lip of the shroud.

3,703,260
MATERIAL SPREADER

John P. Grabske, 2120 East Norwich, St. Francis, Wis.

Filed Dec. 4, 1970, Ser. No. 95,131
Int. Cl. A01c *17/00*
U.S. Cl. 239—666 **5 Claims**

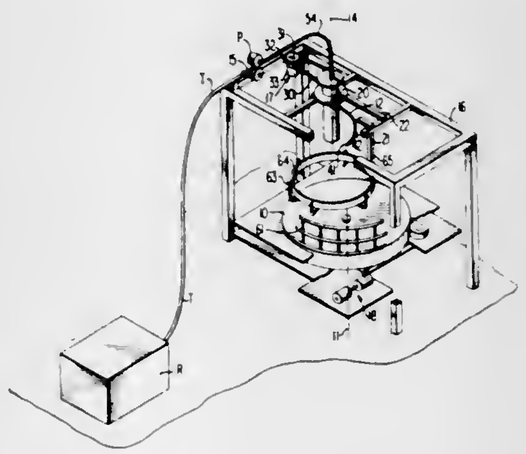


A compact versatile material spreader for use with salt or other materials has a spinner, which is partially enclosed by a spinner housing and which is located below a hopper discharge outlet and above the bottom of the spreader frame to thus afford convenient mounting of the spreader on the flat bed of a truck, a railroad push car, or a pallet carried by a fork-lift truck. An accessory trailer permits the spreader to be trailed behind a vehicle. Adjustable spinner blades afford various selected horizontal discharge angles. A remotely controlled deflector assembly is hinged to the spinner housing and includes independently adjustable side and rear deflector plates to provide safe control of the discharged material to avoid contact with other vehicles or pedestrians. A metering gate at the hopper discharge outlet provides a variable discharge rate and economy in operation.

3,703,261
ORBITAL COILER

Daniel B. Cofer, Carrollton, Ga., and Thomas L. Bray, Birmingham, Ala., assignors to Southwire Company, Carrollton, Ga.

Continuation of Ser. No. 809,875, March 24, 1969, abandoned. This application April 7, 1971, Ser. No. 132,235
Int. Cl. B21c *47/14*
U.S. Cl. 242—82 **8 Claims**



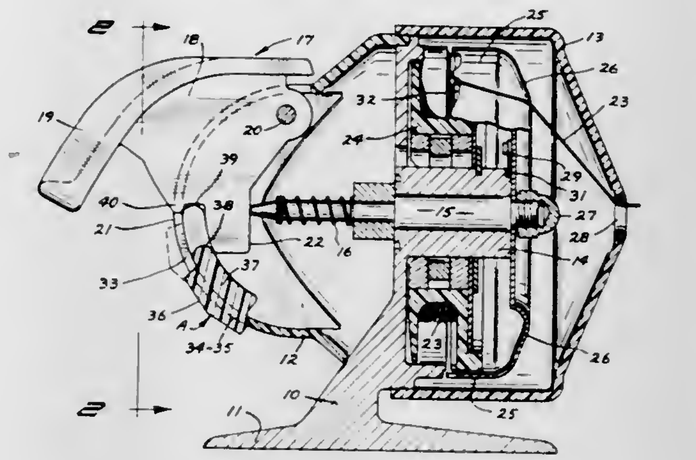
A coiler for coiling metal rod and similar strand material to form a coil and which includes a turntable rotatable about its center and a flyer tube rotatable above the turntable about an axis of rotation displaced from the axis of rotation of the turntable. The receiving end of the flyer tube is positioned in its axis of rotation and the flyer tube curves to terminate at a discharge end which moves in a circular path about its axis of rotation and which is oriented so that metal rod being discharged from the discharge end of the flyer tube is in a continuous series of loops having their centers substantially coinciding with the axis of rotation of the flyer tube. Metal rod to be coiled is fed into the receiving end of the flyer tube and as the metal rod is discharged from the discharge end of the flyer tube as a continuous series of loops, the loops drop to the surface of the turntable. The rotation of the turntable places the loops in succession on the turntable with their centers in a circular path having the axis of rotation of the turntable as its center, and the relationship between the diameter of the loops and the distance by which the axis of rotation of the flyer tube is displaced from the axis of rotation of the turntable is such that each loop includes within its circumference the axis of rotation of the turntable which becomes the centerline of the coil formed by the loops.

3,703,262
PUSH BUTTON LOCK FOR FISHING REELS

Eugene P. Menne, Mankato, Minn., assignor to Johnson Diversified, Inc., Mankato, Minn.

Filed July 16, 1970, Ser. No. 55,452
Int. Cl. A01k *89/00*
U.S. Cl. 242—84.2 A **7 Claims**

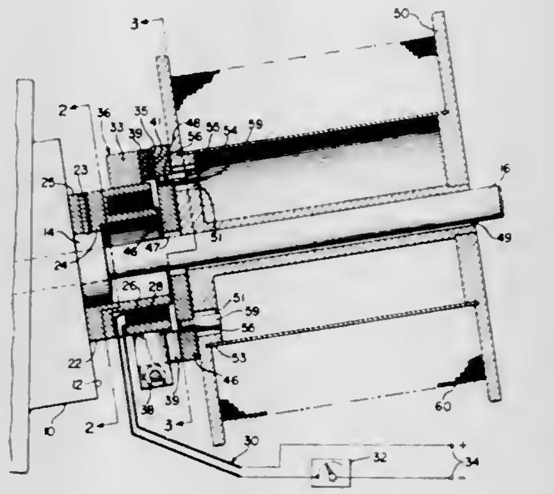
A fishing reel in which a thumb actuated lever is operative between line holding and line releasing positions, which incorporates a slidable locking button that yieldably engages the lever to restrain it in line holding position, to prevent accidental movement of the lever into line releasing position, but which button may be displaced in response to manual pressure on the lever in excess of such imposed restraint, to permit full control of the line by the lever.



3,703,263
CORD TENSIONING DEVICE

Edward E. Hunter, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed April 26, 1971, Ser. No. 137,304
Int. Cl. B65h *49/00*
U.S. Cl. 242—129.8 **21 Claims**



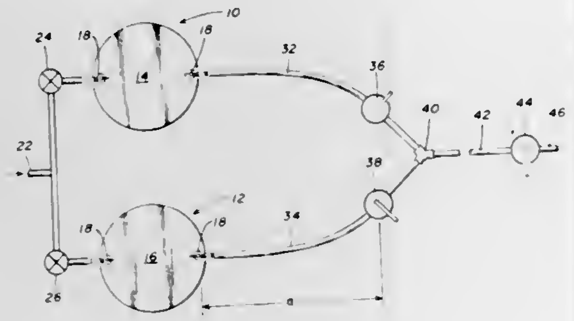
A cord tensioning let-off device having a spindle inclined to the horizontal, a brake member fixed at the lower end of the spindle and a floating armature disposed about the spindle adjacent the brake member and keyed to a spool of cord. Gravity draws the armature into frictional engagement with the brake member and is assisted by an electro-magnet associated with the device.

3,703,264
DISPENSING OF FIBROUS MATERIAL

James Buchanan Winn, Jr., Wimberley, Tex., assignor to The Aichilithic Company, Dallas, Tex.

Filed June 30, 1971, Ser. No. 158,283
Int. Cl. B65h *49/00*
U.S. Cl. 242—129 **10 Claims**

An improvement in a system for dispensing fibrous material with random distribution for reinforcing a matrix into which it is placed. The system includes a fiber supply apparatus for continuously feeding fiber to a dispensing gun with little or no down time. The apparatus includes two fiber supply containers, each connected to a source of compressed air. A lead conduit of sufficient length to insure entrainment of fiber by compressed air is in communication with each of the containers and leads to a dispensing conduit. Each of the lead conduits are flow connected to a valve which can simultaneously terminate air flow and cut a fiber being propelled therein, thus stopping fiber feed. The respective containers and lead conduits are used alternatively so that a fiber supply in one container can be replenished while the other container is supplying fiber to the dispensing system, thus eliminating any down time for fiber supply replenishment.



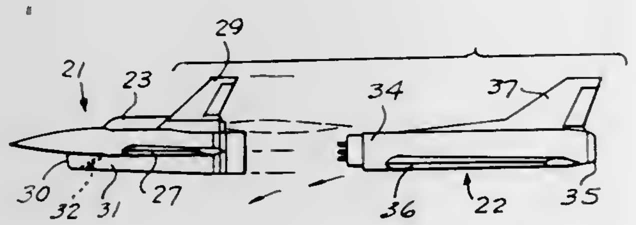
3,703,265
AIRCRAFT WITH SEPARABLE COCKPIT

Manuel Lopez Troitino, Ave. Julio Arjona 40-41, Chitre, Panama

Filed Oct. 30, 1970, Ser. No. 85,405

Int. Cl. B64c *1/00*

U.S. Cl. 244—13 **11 Claims**



An aircraft with a separable cockpit in which the separated cockpit is complete with engine, wings, controls, and landing gear so that it may be flown back to the aircraft carrier or airfield after the major portion of the plane has been damaged sufficient to be inoperative. Apparatus for detachably securing the two portions of the plane together are controlled by the pilot to separate the two portions when the main portion of the plane is damaged. Separable control elements for linking the cockpit controls to the control surfaces of the main portion of the airplane are also provided.

3,703,266
CONTROL UNIT FOR THE LIFT ENGINES OF VERTICAL AND SHORT TAKEOFF AIRCRAFT

Hans Lincks, and Erich W. Weigmann, both of Munich, Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

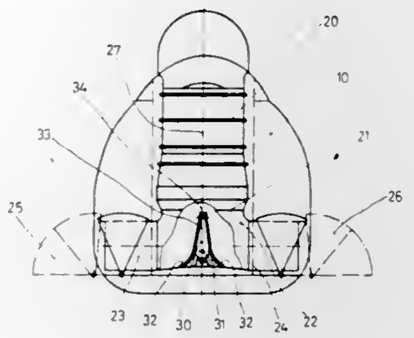
Filed May 18, 1970, Ser. No. 38,062

Claims priority, application Germany, June 4, 1969, P 19 28 503.1

Int. Cl. B64b *1/36*

U.S. Cl. 244—52 **3 Claims**

Control unit for the lift engines of vertical or short takeoff aircraft for correction of motion preferably in relation to the roll axis. The lift engine discharges into a branched conduit of which each respective branch discharges to opposite external sides of the aircraft fuselage Infinitely adjustable means are



provided for selecting and proportioning as desired the respective amounts of the engine discharge introduced into and conducted through said respective branches.

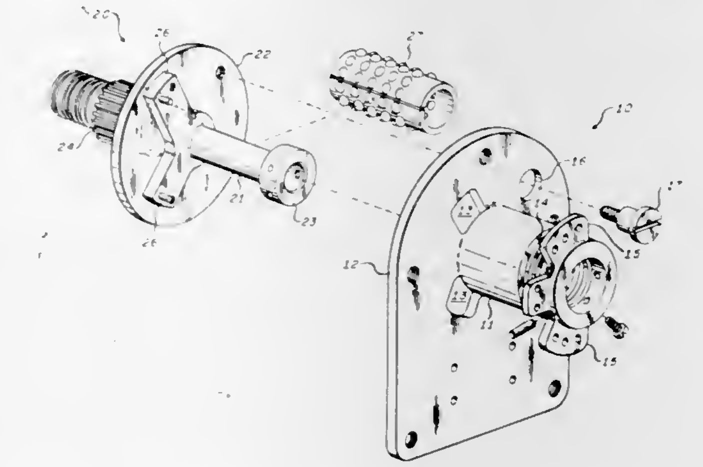
3,703,267
CONTROL WHEEL FORCE SENSORS

Kenneth L. Oliver, Phoenix, Ariz., assignor to Sperry Rand Corporation

Filed Feb. 18, 1971, Ser. No. 116,334

Int. Cl. B64c *13/04*

U.S. Cl. 244—83 E **10 Claims**



A mechanism disposed within the hub of an aircraft control wheel including pitch and roll flexure devices which act as the primary restraints to loads applied to the control wheel and a plurality of load beams that function as redundant sensors which react to a minimal percentage of the applied load. Bearing surfaces between the pitch and roll flexure devices effectively isolate the pitch flexures and beams from the load flexures and beams thereby eliminating cross-coupling between these devices in reacting to pilot initiated pitch and roll commands. Transducers affixed to the pitch and roll beams transform mechanical displacements produced in the beams into electrical output command signals which are used to control the aircraft attitude.

3,703,268
PARACHUTE CONTAINER AND THE APPLICATION OF THE CONTAINER TO A PARACHUTE

Marcel Pravaz, Clichy, France, assignor to Etudes et Fabrications Aeronautiques, Paris, France

Filed Dec. 16, 1970, Ser. No. 98,805

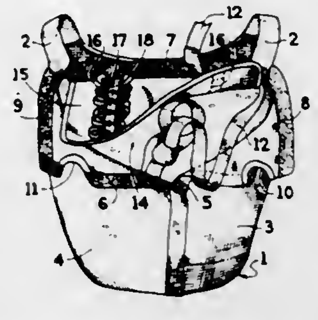
Claims priority, application France, March 27, 1970, 7011238

Int. Cl. B64d *17/50, 17/60*

U.S. Cl. 244—148 **6 Claims**

Automatically opened parachute container for a parachute having an automatic opening strap. The container has two lateral closing flaps whose longitudinal edge portions overlap and have intergripping properties for maintaining the container closed. A panel carrying the opening strap in the coiled

condition is disposed in the upper part of the container in such position as to be covered and protected by the flaps in the



closed container. The hooking end of the opening strap extends out of the closed container by way of an aperture in the container.

3,703,269
ADJUSTABLE SUPPORT BEAM

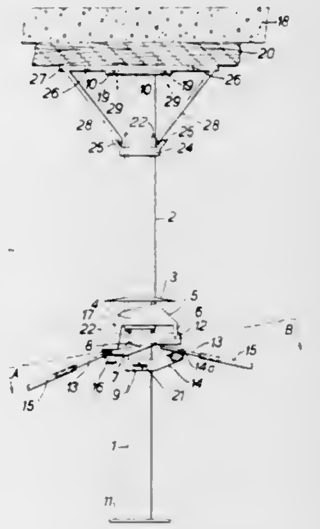
Miquel Casas Meriz, Calle Zaragoza, 11-4°D, Huesca, Spain

Filed Sept. 16, 1970, Ser. No. 72,654

Claims priority, application Spain, Sept. 17, 1969, 151849; Sept. 17, 1969, 151850

Int. Cl. E04g *25/08*

U.S. Cl. 248—354 L **7 Claims**



A support beam consisting of two telescopically interfitting tubular rods provided with an adjusting and locking device wherein the outer rod carries a support collar with opposite lateral extensions and the inner rod carries two sleeves, the upper sleeve being inclined and having opposite horizontal extensions engaged on their outer end by the lateral extensions of the support collar to exert a pressure on this sleeve causing pivoting movement therein to bear against the inner rod in a locking manner, the second sleeve having conventional means to lock it in position on the inner rod.

3,703,270
MOUNTING MEANS

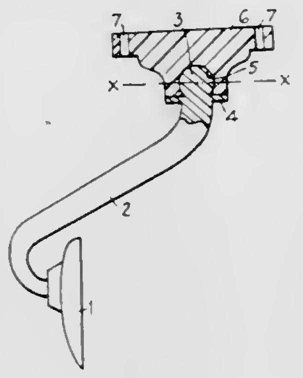
Robert Derrick Tomlin, Hampton Hill, England, assignor to Magnatex Limited, Hounslow, Middlesex, England

Continuation-in-part of Ser. No. 729,210, May 15, 1968. This application Oct. 20, 1970, Ser. No. 82,373

Int. Cl. B60r *1/04*

U.S. Cl. 248—475 A **7 Claims**

The invention relates to a construction of vehicle rearview mirror which conforms with the Federal Safety Regulations concerning interior mirrors, namely, that the mirror mounting shall break away or deflect or collapse when struck by a force of 90 lbs. The mounting comprises a ball head on the mirror arm which fits within a complementary socket of a resilient plastics material, such as "Delrin", forming the base part of the mounting. The arm also carries a shoulder which abuts the



top of the base part and forms therewith a fulcrum about which the arm rocks to force the ball head out of the socket when the mirror is struck.

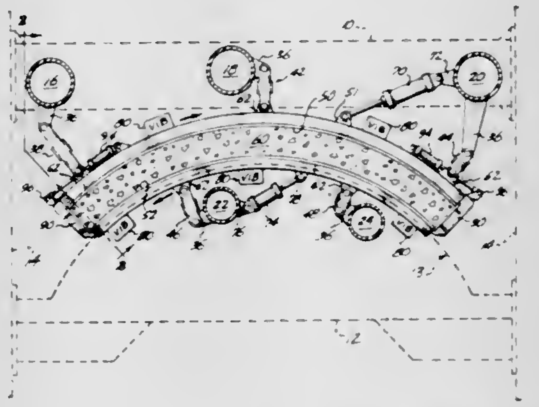
3,703,271
CONCRETE CASTING APPARATUS

Roy A. Kamb, 660 South Dakota Street, Seattle, Wash., and Tyman H. Fikse, 1459 Loraine Street, Enumclaw, Wash.

Filed Dec. 31, 1970, Ser. No. 103,040

Int. Cl. E04g *11/06*

U.S. Cl. 249—34 **10 Claims**



A matching pair of, preferably, arcuate form walls are supported upright in spaced-apart relation on a casting bed. The ends of the space enclosed are gated. At least one of the form walls is pivotally connected to the supporting structure by links that, when lateral pressure on the wall is applied, cause the wall to swing and withdraw from a freshly formed casting between the form walls. At the same time, raising of the form walls is initiated, to, in part, strip them from the casting and, eventually to raise them high enough that they may be moved over and past the just formed casting to a new location on the casting bed.

3,703,272
X-RAY FILM CASSETTE WITH IDENTIFICATION EXPOSURE WINDOW AND EXPOSURE INDICATOR

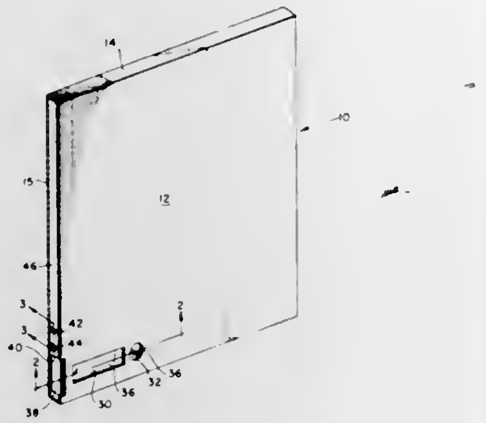
Norman N. Lareau, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 765,948, Oct. 8, 1968, abandoned. This application Nov. 12, 1970, Ser. No. 89,100

Int. Cl. G03b *17/26*

U.S. Cl. 250—67 **4 Claims**

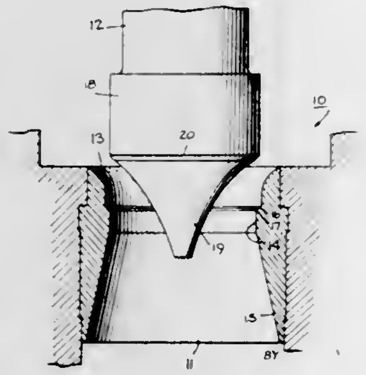
A film cassette includes a rigid base having a cylindrical film supporting surface and a resiliently curved cover which closes over the cylindrical surface in mating relationship therewith to enclose the film and define flat, rectangular external cassette surfaces. The cassette is provided with an exposure window through which the film can be exposed to patient identification information by photographic projection and a color-coded indicator to give a visual signal when the film has been



patient identified. An observation opening may also be provided for positive inspection to ensure the presence of film in the cassette.

3,703,273
LOW LOSS INNERVALVE ASSEMBLY

Henry Illing, Parksville, N.Y., assignor to Kieley & Mueller, Inc., Middletown, N.Y.
Filed Aug. 24, 1970, Ser. No. 66,167
Int. Cl. F16k *47/00*
U.S. Cl. 251—122 11 Claims

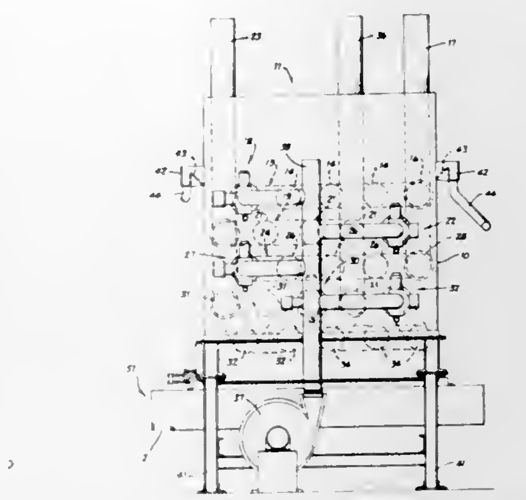


The seat ring is formed with a bellmouth inlet while the innervalve can be tapered, flat or curved. The bellmouth shaped inlet allows a high flow rate to be obtained with energy losses and noise reduced to a minimum. The inlet can be slightly modified to change the valve characteristic without effecting efficiency to any significant degree.

3,703,274
AGGREGATE DRYER FOR ASPHALT PLANT

David E. Davis, Indianapolis, Ind., assignor to Midwest Steel Fabricators, Inc., Indianapolis, Ind.
Filed Dec. 28, 1970, Ser. No. 101,793
Int. Cl. F27b *1/08*
U.S. Cl. 263—30 3 Claims

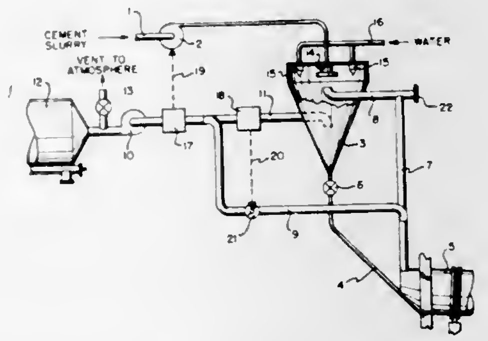
Disclosed is a dryer-heater for drying and heating aggregate material prior to its mixing with other ingredients in the production of asphalt paving materials. Drying of the aggregate is accomplished as it moves vertically through an open bin, heat being provided by sinuous passes of tubes carrying hot combustion gases from fuel burners to exhaust stacks; the combustion gases are kept separate from the aggregate so that



no dust or fines are discharge from the stack and the sinuous combustion gas tubes are placed so as to efficiently utilize the heat from the burners to dry and elevate the temperature of the aggregate.

3,703,275
TREATMENT OF CEMENT RAW MATERIALS

Karl Jens Sylvest, Vigerslev Alle, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.
Filed Feb. 17, 1971, Ser. No. 115,951
Claims priority, application Great Britain, Feb. 26, 1970, 9,421/70
Int. Cl. F27b *7/20*
U.S. Cl. 263—32 R 10 Claims

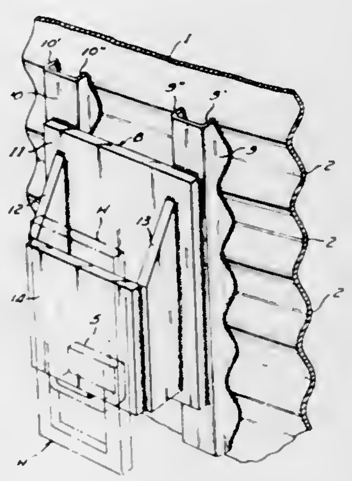


In the processing of cement raw materials a slurry of those materials which includes alkalis is preheated and dried by hot gases from a kiln. These gases which are cooled by the drying process subsequently flow to a dust precipitator. An amount of hot gases from the kiln is allowed to by-pass the slurry and flow to the dust precipitator so as to bring the temperature of the gases entering the dust precipitator into the range of 125° to 250°C. Simultaneously, there is a reduction of the amount of alkali material carried into the kiln by the dried slurry.

3,703,276
CORRUGATED INNER COVER STRUCTURE

Joseph R. Ford, Lakewood, Ohio, assignor to Lee Wilson Engineering Company Inc., Cleveland, Ohio
Filed Aug. 16, 1971, Ser. No. 171,992
Int. Cl. F27d *1/18*
U.S. Cl. 263—49 3 Claims

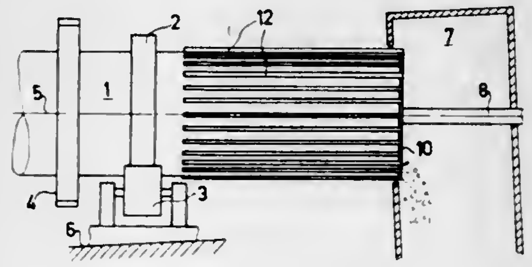
An inner cover structure particularly adapted for use in annealing coils of strip steel or the like in a bell type furnace in which the inner cover comprises a transversely corrugated cylindrical body of relatively thin sheet metal having a closed top and an open bottom. The cylindrical body has secured to the outer surface thereof two or more circumferentially spaced lifting lugs or brackets which are adapted to receive lifting hooks so that the inner cover may be positioned on and removed from a furnace charge by means of an overhead crane or the like. The lifting brackets each comprise a plurality of spaced vertical members of approximately the same



gauge metal as the cylindrical body and having their edge portions corrugated to conform to the corrugations of the cylindrical body and welded thereto. Crane hook socket forming members are secured to the vertical members and are adapted to be engaged by the lifting hooks referred to above.

3,703,277
COOLING APPARATUS FOR THE OUTLET OF A ROTARY KILN

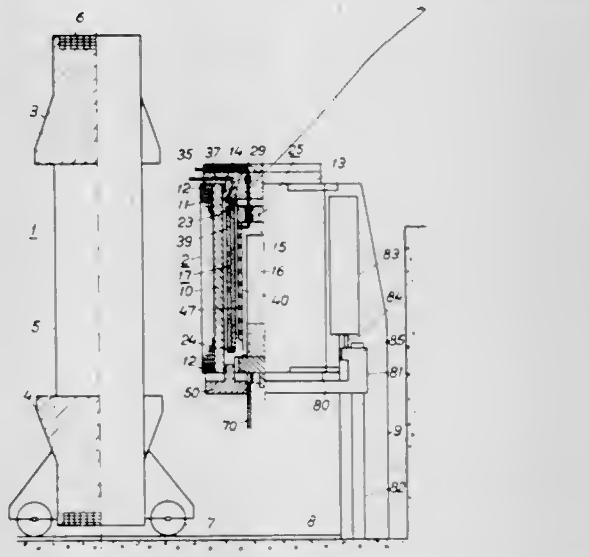
Ulrich Walter Bosshard, Winterthur, Switzerland, assignor to "Holderbank" Management & Consulting Ltd., Kanton Aargau, Switzerland
Filed Feb. 2, 1971, Ser. No. 111,930
Claims priority, application Switzerland, Feb. 4, 1970, 1559/70
Int. Cl. F27d *9/00*; F28d *15/00*
U.S. Cl. 263—44 8 Claims



Cooling means for the outlet of a rotary kiln are disclosed. The cooling means comprises a plurality of closed boiler tubes containing a vaporizable liquid and its vapor. The tubes encircle the outlet end of this kiln and extend in the direction of the kiln's axis of rotation and are generally parallel with one another. The end portions of the tubes nearest the kiln outlet are connected in a thermally conductive manner with the cylindrical shell of the kiln. The remainder of the tubes are in the ambient atmosphere in which the kiln is operated. The means preferably includes an annular portion which extends radially inward from the ends of the tubes and adjacent to the end face of the kiln outlet to protect the face from heat radiating from the kiln. The annular member is preferably segmented and is made of a thermally conductive material.

3,703,278
FURNACE FOR SINTERING POWDER

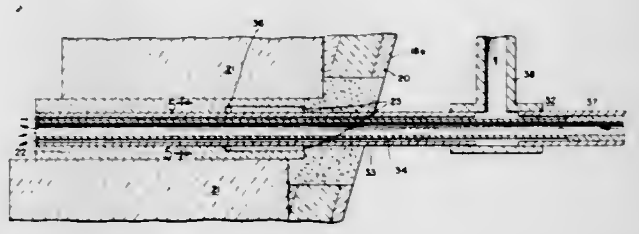
Sven-Erik Isaksson, Robertsfors, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Division of Ser. No. 12,701, Feb. 19, 1970, abandoned. This application July 9, 1971, Ser. No. 161,200
Claims priority, application Sweden, March 3, 1969, 2856/69
Int. Cl. C21d *1/00*
U.S. Cl. 266—24 4 Claims



Sintered bodies are formed from powder material by sintering a body produced from a powder at atmospheric pressure or below and at such a temperature that the powder grains adhere to each other and thereafter isostatically hot pressing the sintered bodies to high density in a furnace containing an inert atmosphere. The powder may contain hard metal particles such as metal carbides and a binder of an iron group metal. The furnace is formed by a cylindrical pressure chamber with a high pressure cylinder and end closures projecting into the cylinder. A furnace chamber is arranged in the pressure chamber and has heating windings and an insulating lid and bottom. One end closure of the pressure chamber has an annular part with members sealing against the cylinder and a valve plate covering the opening of the annular part. A vacuum conduit is provided which can be sealingly connected to the annular part and which includes projecting members for separating the valve plate and the annular part when the conduit is placed in operative position.

3,703,279
REACTOR

Joseph M. Saccomano, and John D. Ellis, Jr., both of Fort Wayne, Ind., assignors to Joslyn Manufacture and Supply Co., Chicago, Ill.
Filed Aug. 15, 1969, Ser. No. 850,358
Int. Cl. C21b *7/16*
U.S. Cl. 266—41 1 Claim

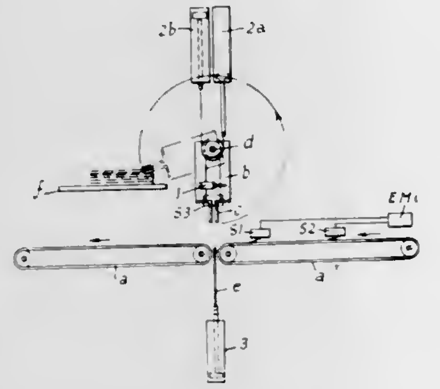


There is provided an improved reactor for the refining of molten metals, including an improved reaction vessel generally circular in cross section for holding a charge of molten metal, and having a lower side wall portion of the container sloping inwardly. A cover is provided on the container having edge areas projecting abruptly inwardly and having an elongated pouring spout radially inwardly of the edge areas.

The reaction vessel is provided with an improved tuyere formed generally of concentric tubes of constant cross section so that the cross section of the tuyere remains constant as the tuyere erodes away with the erosion of the inner lining during successive heats of refined metal.

3,703,280
LAUNDRY STACKING MACHINE

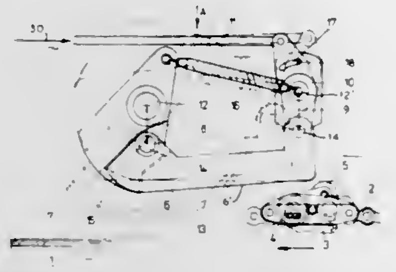
Henry John Weir, 37, Ormerod Road, Chepstow, England
Filed Nov. 20, 1970, Ser. No. 91,326
Claims priority, application Great Britain, Nov. 22, 1969, 57,260/69
Int. Cl. B65h *45/18*
U.S. Cl. 270—83 **9 Claims**



A machine for folding and stacking laundry articles comprising a clamp having a pair of substantially horizontal elongate jaws; tucking means for tucking a laundry article between the jaws to allow the article to be clamped at a fold line, and driving means for swinging the clamp about and over a substantially horizontal axis so that the body of the clamped article is flung outwardly down on to a stack where the article is released from the jaws.

3,703,281
SHEET FEEDING APPARATUS HAVING GRIPPER CONTROL, FOR USE WITH PRINTING MACHINES

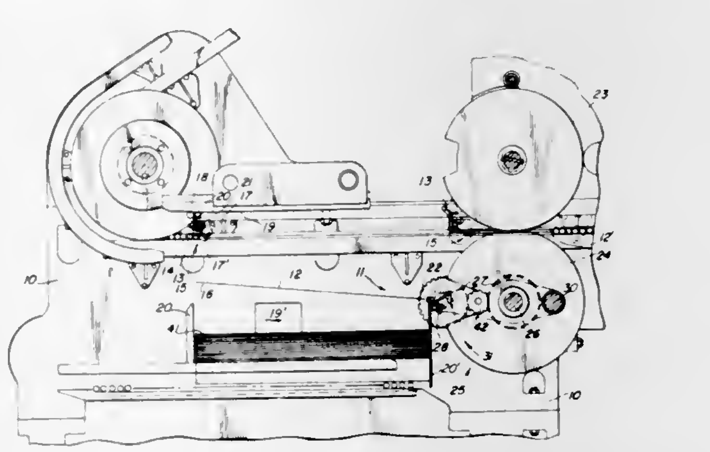
Oskar Liebert, Westheim, and Klaus Theilacker, Neusass, both of Germany, assignors to Maschinenfabrik Augsburg-Nurnberg AG, Augsburg, Germany
Filed Aug. 12, 1971, Ser. No. 171,167
Claims priority, application Germany, Aug. 17, 1970, P 20 40 670.6
Int. Cl. B65h *29/28*
U.S. Cl. 271—79 **12 Claims**



The grippers on a sheet feeding apparatus from a printing machine are controlled by having a follower contacting the leading cam formed as a parallelogram - shiftable track, suspended on leading and trailing swing arms of equal length, having one end each pivotable about leading and trailing points, the shiftable track being arranged at shallow angle with respect to the center of the chain conveyer; and a trailing cam, formed as a swingable segmental-like element swinging about a pivot point and having a leading edge thereof located approximately in the prolongation of a line connecting the pivot point thereof and the suspension point of the trailing swing arm of the shiftable track. The trailing cam means being formed to have a leading edge outline which matches substantially with the trailing edge outline of the leading cam, so that the gripper control follower will be smoothly engaged by both leading and trailing cams to release sheets carried by the grippers, and the release position is readily adjustable for various sizes of printed material.

3,703,282
PLANETARY SHEET SLOWDOWN AND LAYDOWN MECHANISM

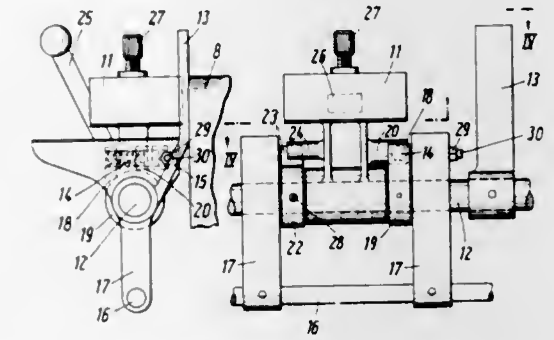
Allmen P. Henkel, Lake Forest, Ill., assignor to Western Printing Machinery Co., Schiller Park, Ill.
Filed March 26, 1971, Ser. No. 128,358
Int. Cl. B65h *29/28, 29/06*
U.S. Cl. 271—79 **5 Claims**



A sheet slowdown and stacking mechanism having horizontal grippers for engaging the tail edge of a sheet moving at high speed over a sheet stack followed by release of the leading edge of the sheet from a conveying transport gripper bar, the tail edge of said sheet being carried forward and downward on a curvilinear path engaged by the horizontal grippers which are gyrating about the axis of a rotating reel, said grippers decelerating the forward motion of the sheet substantially to zero at the point of release over the sheet stack for laying down the sheet on the stack pile.

3,703,283
DEVICE FOR SENSING AND CONTROLLING THE DELIVERY PILE OF SHEET-FED PRINTING PRESS

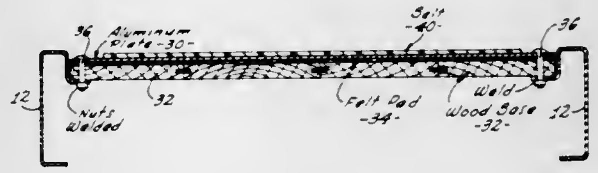
Paul Abendroth, Offenbach am Main, and Werner Kaiser, Offenbach am Main-Rumpenheim, Germany, assignors to Roland Offselmaschinenfabrik Faber and Schleicher AG, Offenbach am Main, Germany
Filed Sept. 30, 1970, Ser. No. 76,857
Claims priority, application Germany, Oct. 8, 1969, P 19 50 650.4
Int. Cl. B65h *31/38*
U.S. Cl. 271—88 **9 Claims**



A device for sensing and controlling the height of a pile of sheets on the delivery table of a sheet-fed rotary printing press has a contactless sensing head loosely mounted on an oscillating shaft which carries the joggers for aligning the delivered sheets. The sensing head is resiliently urged against stop means to maintain it in sensing position but can be swung clear of the pile with the joggers when the shaft is rotated to bring the joggers away from the pile to take a proof sheet by the interengagement of dogs on the sensing head and the shaft. Switch means in the head are provided to stop the pile table motor when the head is swung clear.

3,703,284
DIAGNOSTIC AND THERAPEUTIC EXERCISE TREADMILL

Joseph A. Hesen, Burbank, Calif., assignor to Del Mar Engineering Laboratories, Los Angeles, Calif.
Filed Dec. 31, 1970, Ser. No. 103,155
Int. Cl. A63b *23/06*
U.S. Cl. 272—69 **6 Claims**

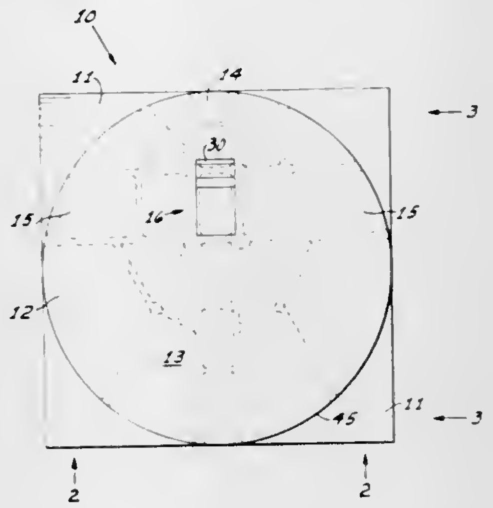


An improved exercise treadmill is provided for diagnostic and therapeutic purposes, and which includes a heavy multiply nylon belt which is driven along and around a metal plate to define the walking area. The metal plate is composed, for example, of material of high heat conductivity, and it is coated with Teflon. This results in low friction and insures low drag, regardless of the weight of the patient. An advantage of the Teflon coating is that it does not require waxing. The aforesaid plate may be coated on both sides so that it may be reversed for extended use after the Teflon coating on one surface has become worn.

Additionally, the metal plate is supported by a layer of resilient sheet material mounted on a platform to give the desired resilience to the plate.

3,703,285
PITCHER'S MOUND WITH TOE BLOCK AND REINFORCING RIBS

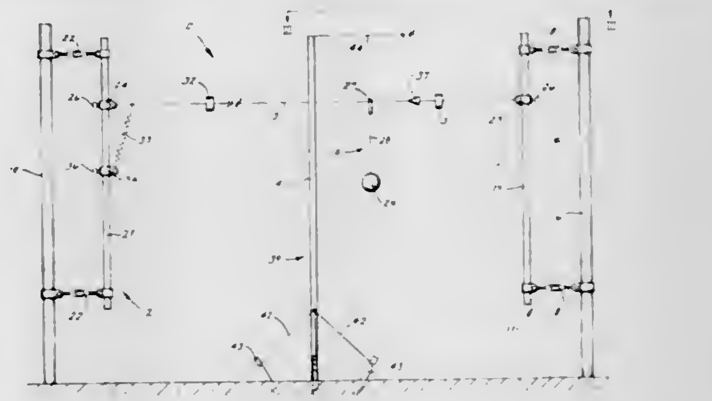
James T. Perry, Knightstown, Ind., assignor to Philip H. Willkie, Rushville, Ind., a part interest
Filed April 29, 1971, Ser. No. 138,642
Int. Cl. A63b *71/00*
U.S. Cl. 273—25 **5 Claims**



A portable pitching mound having a removable toe block and reinforcing ribs. A base is integrally joined to an upward sloping mound having a removable toe block secured at its top. The removable toe block is secured within the mound by a tongue and groove arrangement. The removable toe block is made from rubber having a heel supporting portion and a toe supporting portion. Various reinforcing ribs are integrally attached to the hollow bottom interior of the mound supporting the removable toe block. A non-skid pad is attached to the bottom of the pitcher's mound.

3,703,286
BATTING PRACTICE DEVICE

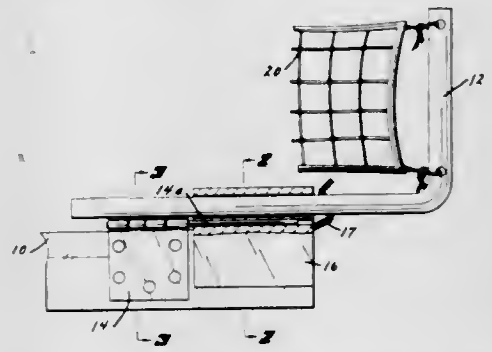
William C. Adkin, Route No. 2, Ganges Twsp., Allegan County, Mich.
Filed June 24, 1971, Ser. No. 156,236
Int. Cl. A63b *69/40*
U.S. Cl. 273—26 E **10 Claims**



A batting practice device having an elongated line extending between a pair of upright pole assemblies. A ball is fixedly secured to one end of a short tether line, the other end of which is slidably connected to the guide line. The guide line has a fixed stopped secured adjacent each end thereof, which stop is spaced from the adjacent pole. A person stands near one pole assembly for throwing the ball to a batter standing adjacent the other pole assembly. A one-way stop device is fixedly secured to the guide line adjacent said one pole assembly and is slightly spaced from the adjacent fixed stop whereby the tethered ball assembly, when batted by a batter, will freely pass over said one-way stop so as to engage the adjacent fixed stop. The one-way stop prevents rebound of the ball toward the pitcher but keeps the ball positioned close to the pitcher to permit further throwing thereof. A safety post is preferably positioned in front of the pitcher for preventing the pitcher from being struck by the ball after same has been hit by the batter.

3,703,287
NET HOLDER FOR TABLE TENNIS TABLE

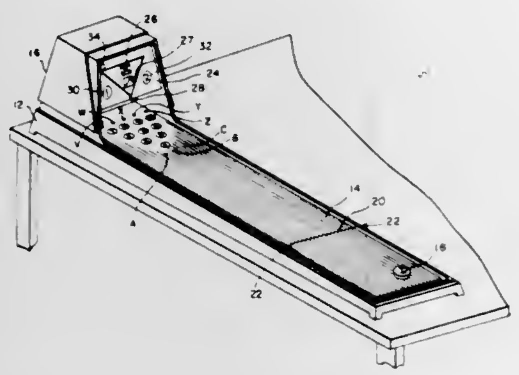
Max D. Smith, and Frank M. Adkins, both of Evansville, Ind., assignors to Indian Industries, Inc., Evansville, Ind.
Filed May 12, 1971, Ser. No. 142,441
Int. Cl. A63b *61/00*
U.S. Cl. 273—30 **3 Claims**



A net holder for a table tennis table defined by a slide which is received on an elongated hinge pin of a conventional hinge, where the net bracket, in turn, is received in the aforesaid slide. Catch means are provided for maintaining the position after net assembly.

3,703,288
ELECTRONIC BOWLING GAME

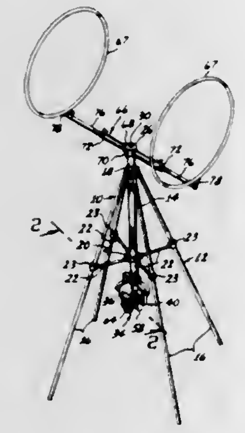
John D. Vogel, and William N. Canfield, both of Columbus, Ind., assignors to Arvin Industries, Inc., Columbus, Ind.
Filed Oct. 22, 1969, Ser. No. 868,344
Int. Cl. A63d *3/00*
U.S. Cl. 273—41 **9 Claims**



A bowling game formed by a platform having a plurality of switches mounted therebelow with actuators extending upwardly through the surface of the platform. Ten lights are arranged on the surface of the platform in a configuration similar to that of a conventional bowling game, and a disc is used for sliding along the platform to actuate the switches which are connected to turn off the lights. Eight switches are used and they control the ten lights by means of logic circuitry which interconnects the switches with the lights. The game also includes a second series of lights including a ready light, a "ball" light for indicating whether it is "ball one" or "ball two" which will be thrown, a strike light, and a spare light. Circuits for controlling these lights together with a reset circuit are interconnected with the switches, the logic circuitry and the pin lights so that the game is electronically controlled. Circuitry is included to prevent actuation of the logic circuitry when the platform is subject to physical shock and to prevent actuation of the switches when the disc is returned along the platform to a player.

3,703,289
REVOLVING TARGET HAVING HORIZONTALLY ALIGNED HOOPS

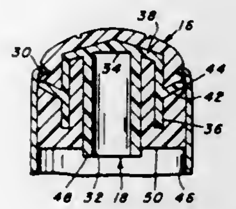
Terrel L. Hobman, 235 North Pleasant St., Prescott, Ariz.
Filed July 6, 1971, Ser. No. 159,844
Int. Cl. F41j *9/00*
U.S. Cl. 273—55 R **9 Claims**



A revolving target is disclosed which may be used for training or amusement purposes and is provided with a pair of hoops mounted on a rotating member. The hoops are spaced apart and driven at various speeds to develop or test the skill of a user by requiring not only accuracy of projection, but also requiring precise timing so that a projectile will pass through both hoops.

3,703,290
BALL BAT CONSTRUCTION

Richard C. Wilson, Arcadia, Calif., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed March 8, 1971, Ser. No. 121,677
Int. Cl. A63b *59/06*
U.S. Cl. 273—72 A **7 Claims**

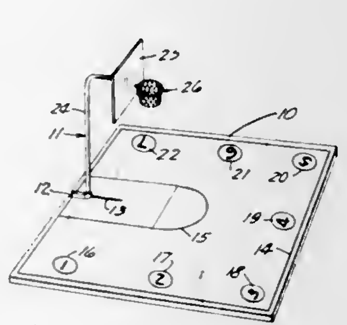


An end plug for a hollow ball bat. The end plug has a substantially rigid inner plug member and a resiliently compressible outer plug member secured to the inner member. The outer plug member has a periphery provided with a generally cylindrical lower portion and an upper portion separated from the lower portion by an outwardly open annular recess. The inner plug member has a generally radially outwardly directed stabilizer portion which extends radially outwardly at least to a position adjacent to the periphery of the outer plug member. The outwardly directed stabilizer portion of the inner plug member may be divided into a plurality of individual stabilizer segments and may be provided with underlying reinforcing members.

A hollow ball bat having a generally cylindrical barrel portion and a generally cylindrical handle portion. At least one of the barrel and handle portions terminating in an open end provided with a transversely inwardly directed flange which is engaged within the annular recess of the end plug to provide an effective mechanical joint between the bat and the end plug. The composite end plug serves to provide both sound and vibration deadening means and integral structural reinforcing means resisting relative axial movement between the end plug and the ball bat.

3,703,291
BASKETBALL APPARATUS INCLUDING A POST STABILIZING SLOT

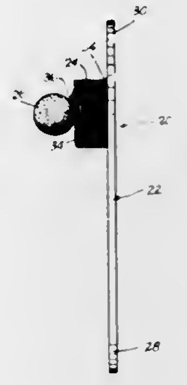
Warren R. Lutz, 249 Grant Drive, Route 3, Stillwater, Minn.
Filed Sept. 22, 1971, Ser. No. 182,697
U.S. Cl. 273—85 R **3 Claims**



A miniature basketball game apparatus includes a flat base centrally slotted at one edge to receive a post supported on a thin foot for insertion beneath the slotted base and in turn supporting a backboard and basket. A narrow extension of the slot receives an edge of the backboard when the device is disassembled for storage in a close-fitting box. Several sequentially numbered circles on the flat base are provided to induce competitive play.

3,703,292
PADDLE WITH ELASTIC COIL BALL TETHER

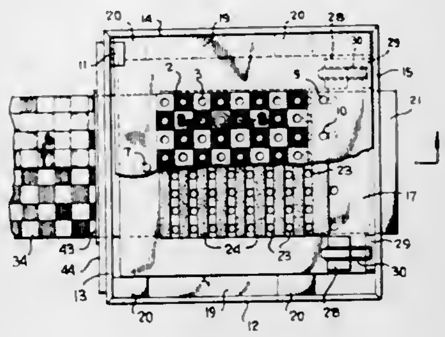
Irving Starr, 8560 Averett, St. Louis, Mo.
Filed Aug. 26, 1970, Ser. No. 67,003
Int. Cl. A63b *73/02*
U.S. Cl. 273—97 R **2 Claims**



A paddle toy for coordination, skill and amusement employing a paddle and a ball connected by a coil spring having a substantially rectangular cross section. Through the use of the special coil spring which permits stacking of the coils, the ball can be bounced with an intriguing sound effect against the paddle requiring the development of skill for amusement. In modifications, the ball may be substituted by a figurine and the ball or figurine and the paddle can be coated with a luminescent paint for nighttime illumination.

3,703,293
GAME BOARD WITH RECORDING MEANS

Armas H. Nekton, 32 Sunset Road, Valley Stream, N.Y.
Filed Dec. 31, 1970, Ser. No. 103,157
Int. Cl. A63f *3/02*
U.S. Cl. 273—136 C **16 Claims**

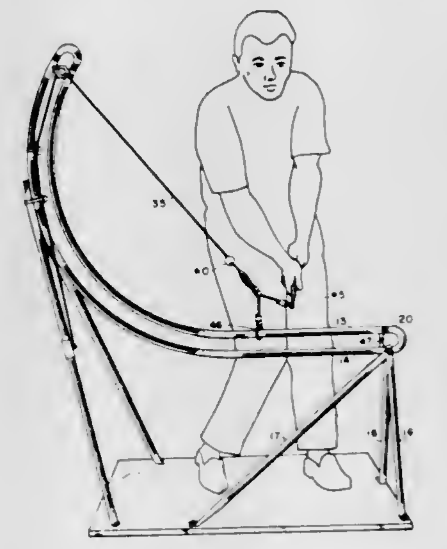


A game apparatus for playing and recording successive plays in a game of chess wherein the game board has squares marked thereon. Each square has a vertical opening therethrough for receiving a playing piece having a shank and an end with recording indicia thereon. A grid beneath the game board is movable between a recording position and an inking position and has openings for receiving the shanks of the playing pieces when the grid is in its recording position. The grid also has inking means located on the surface of the grid facing the game board for receiving the ends of the playing pieces having recording indicia thereon when the grid is in its inking position. Means are provided below the grid to supply a continuous web of material for recording the position of the playing pieces.

3,703,294
GOLF SWING TRAINING APPARATUS

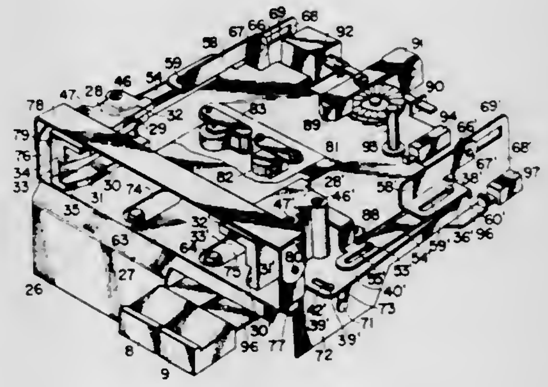
Robert E. Fitch, R.R. 1, P.O. Box 39, Bloomington, Ind.
Filed Sept. 20, 1971, Ser. No. 181,694
Int. Cl. A63b *21/04, 69/36*
U.S. Cl. 273—191 R **10 Claims**

An apparatus for training and perfecting a golfer's swing. An arcuate shaped rod is mounted atop members which extend upwardly from a flat base. A handle configured in a manner similar to the top end of a golf club shaft is connected by means of a flexible cord to a ring which is slidably mounted to the rod. An elastic line is connected to the cord between the ring and handle and extends upwardly therefrom passing through a plurality of guiding pulleys with the opposite end of the line being secured to a connector adjustably mounted to one of the members. The connector is adjustably movable along the length of one of the members, so as to control the tension in the line. A golfer by standing on the base may grasp the handle which is normally urged at the top end of the rod by the elastic line. The golfer may then swing the handle downwardly along the path of the arcuate shaped rod which is configured and positioned in an empirical relationship with respect to the base.



3,703,295
MAGNETIC RECORDING AND REPRODUCING APPARATUS

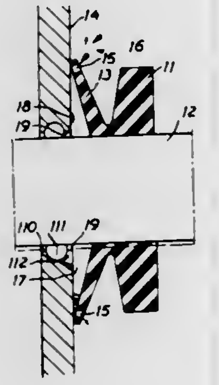
Kozo Yamamoto, Hirakata-shi, and Takehisa Takamiya, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 2, 1969, Ser. No. 881,380
Claims priority, application Japan, Dec. 9, 1968, 43/91274; Dec. 9, 1968, 43/91275; Dec. 9, 1968, 43/91276; Dec. 9, 1968, 43/91277; Dec. 9, 1968, 43/91278; Dec. 9, 1968, 43/91279; Dec. 9, 1968, 43/91280; Dec. 9, 1968, 43/91281
Int. Cl. G11b *25/06*
U.S. Cl. 274—4 G **5 Claims**



A magnetic recording and reproducing apparatus capable of recording and reproducing magnetic tapes accommodated in magnetic tape containers of different shapes, i.e., in both a tape cassette in which a tape is sent from one reel to another and an endless cartridge, which are selectively inserted into the apparatus.

3,703,296
SEALING BETWEEN A ROTARY AND A STATIONARY MEMBER

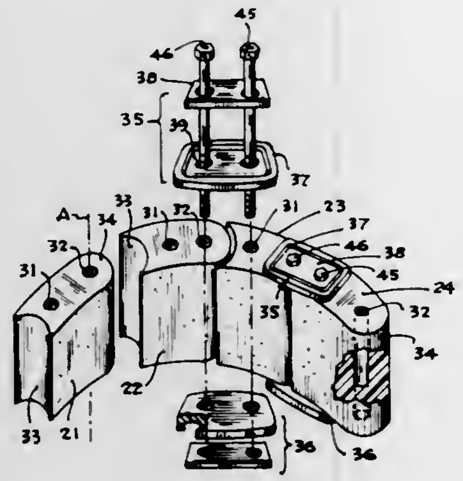
Sven Erik Malmstrom, Peftele, Sweden, assignor to Forsheda Gummifabrik AB, Forsheda, Sweden
Continuation of Ser. No. 709,841, March 1, 1968. This application May 20, 1970, Ser. No. 37,489
Int. Cl. F16j *15/16, 15/42*
U.S. Cl. 277—25 **3 Claims**



A sealing between a rotary and a stationary member comprises two substantially axially engaging slide rings, one of which is connected to the rotary member while the other is connected to the stationary member. The slide ring connected to the rotary member is provided with at least one passage interconnecting the spaces located on either side of the slide ring.

3,703,297
ARTICULATED LINK SEALS

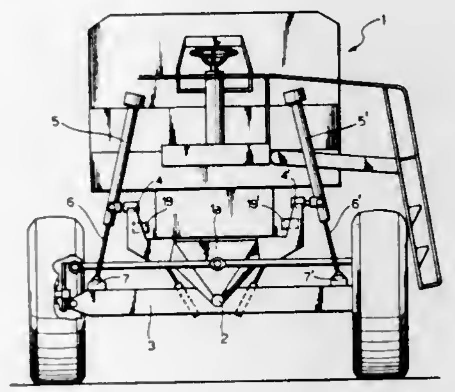
Robert J. Gignac, Belleville, Mich., assignor to Thunderline Corporation, Wayne, Mich.
Filed Dec. 22, 1970, Ser. No. 100,634
Int. Cl. F16j *9/16, 15/02*
U.S. Cl. 277—166 **5 Claims**



An annular shock-absorbing fluid seal assembly including a plurality of modular seal blocks of resilient elastomer material compressed in one direction to cause expansion in another direction and seal the outer surface of a conduit to the inner surface of an opening through which the conduit projects. Two pressure plates span the joint between each adjacent pair of seal blocks, on opposite sides of the blocks, and are joined by bolts that extend through the blocks, the bolts and pressure plates joining the blocks in a ring as well as compressing the seal blocks. One embodiment uses two bolts for each pair of pressure plates; another employs arcuate guide ribs on the pressure plates that fit into complementary grooves in the seal blocks.

3,703,298
DEVICE FOR AUTOMATIC SELF-LEVELLING OF THE BODY OF A THRESHING-HARVESTING MACHINE

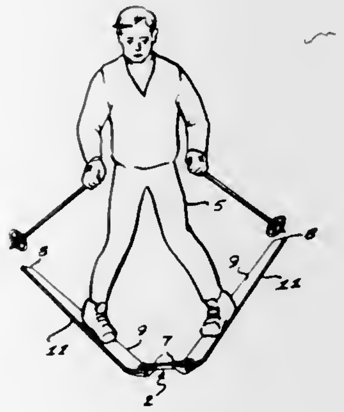
Pietro Laverda, Breganze, Italy, assignor to Pietro Laverda S.p.A., Breganze, Italy
Filed June 11, 1971, Ser. No. 152,144
Claims priority, application Italy, July 6, 1970, 69323 A/70
Int. Cl. B60g *17/04*
U.S. Cl. 280—6 H **3 Claims**



Automatic self-levelling of the body of a threshing-harvesting machine is effected by a device which is sensitive to the operation of respective magnetic float switches located in respective interconnected liquid-containing vessels positioned on opposite lateral sides of the body. Each vessel contains two laterally spaced apart float switches connected to electrovalves in an hydraulic circuit for self-levelling actuators so that when either of the laterally outer float switches is operated the actuators are supplied with part of the hydraulic fluid output from a pump to effect correction and when either of the inner switches is operated at a greater angle of inclination, the actuators are supplied with the full pump output to effect rapid levelling. An alarm is operated automatically in the event of excessive inclination of the body of the machine.

3,703,299
SKI TEACHING AID

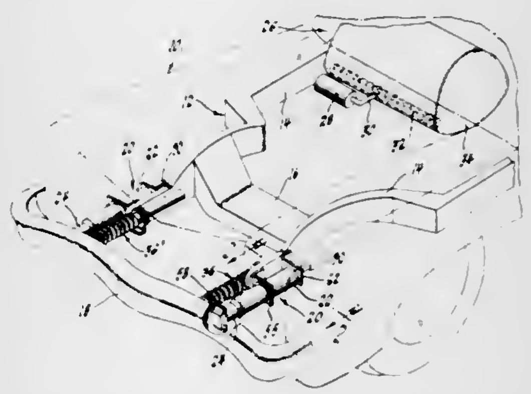
Edward K. Kutchma, 2003 Pinegrove Avenue, El Paso County, Colo.
Filed Nov. 27, 1970, Ser. No. 93,221
Int. Cl. A63c *11/00*
U.S. Cl. 280—11.37 E **1 Claim**



The invention resides in a device for securing the tip ends of a pair of skis together comprising a pair of clamps for attachment to the outside edges of the skis, which clamps are interconnected by a flexible strap or web.

3,703,300
VARIABLE CAPACITOR CRASH SENSOR

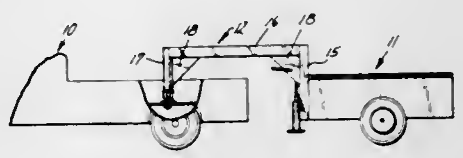
Arden G. Gillund, Oak Creek; Dan K. Holtshouse, Milwaukee; John A. Moretti, and Vincent A. Orlando, both of Greendale, all of Wis., assignors to General Motors Corporation, Detroit, Mich.
Filed July 2, 1971, Ser. No. 159,169
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **7 Claims**



A pair of electro-mechanical sensors mounted between the vehicle bumper and frame exhibit a capacitance related to the position of the bumper relative to the frame. During a collision, the changing capacitance of the sensors is detected by control circuitry to determine the velocity of the bumper relative to the frame at impact. If the velocity at impact is greater than a predetermined value for a predictable interval of time, where the predictable interval of time varies with the velocity at impact, a signal is provided for inflating a cushion.

3,703,301
TRAILER HITCH

Dee Randle, Ennis, Tex., assignor to Swan Trailers Inc., Garland, Tex.
Filed Feb. 12, 1971, Ser. No. 114,836
Int. Cl. B62d *53/00*
U.S. Cl. 280—438 **4 Claims**

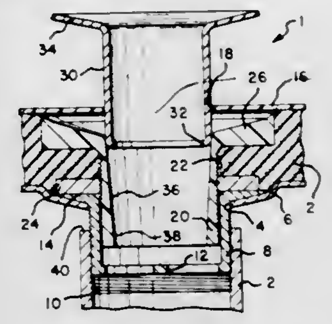


An inverted generally U-shaped tongue affixed to the front end of a trailer with the forward downwardly directed end thereof having a downwardly directed opening therein and an upwardly projecting member affixed generally centrally in a truck body, which member is constructed to be received within the opening in the tongue, said tongue and member having transverse, aligned openings therethrough with a pin receivable therein. A jack is incorporated in the front end of the trailer to raise and lower the tongue to disengage and engage it with the member mounted in the truck box.

3,703,302
DRAIN ASSEMBLY FOR DRAIN PIPE

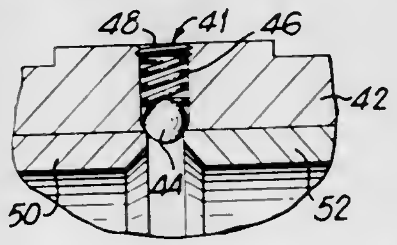
Henry William Demler, Sr., Lebanon, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed March 26, 1971, Ser. No. 128,296
Int. Cl. F16l *5/00*
U.S. Cl. 285—161 **1 Claim**

According to the invention, a drain assembly adapts a drain pipe for operative connection to a basin. The drain pipe is provided with a compressible resilient liner which is at least partially received in the drain pipe. A substantially rigid sleeve is forcibly inserted into the liner compressing it radially outward against the encircling drain pipe. The sleeve is especially suited for forming the drain of the basin and the compressed liner forms a sealed interface between the basin drain and the drain pipe, thereby operatively coupling the drain pipe to the basin.



3,703,303
SLIP-FIT ELECTRICAL COUPLING

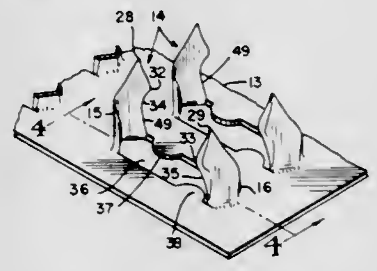
Jonah Eidelberg, Huntington Station, N.Y., assignor to Electrical Fittings Corporation, East Farmingdale, N.Y.
Filed Aug. 24, 1970, Ser. No. 66,408
Int. Cl. F16l *21/06*
U.S. Cl. 285—382.7 **5 Claims**



An electrical coupling for attachment to a pair of rigid conduits in a confined space includes a sleeve member which slidably receives the conduit, and further includes a stop member centrally disposed on the sleeve for movement into and out of the bore of the sleeve for providing a stop when extending into the bore, and for allowing the sleeve to be slipped back onto either conduit when the screw is removed from the bore of the sleeve.

3,703,304
CONSTRUCTION ELEMENT WITH ANCHOR TEETH

Walter J. Losee, Indianapolis, Ind., assignor to Atlas Engineering Products, Inc., Indianapolis, Ind.
Continuation-in-part of Ser. No. 876,794, Nov. 14, 1969, abandoned. This application Sept. 9, 1971, Ser. No. 178,894
Int. Cl. F16b *5/00*
U.S. Cl. 287—20.92 L **4 Claims**

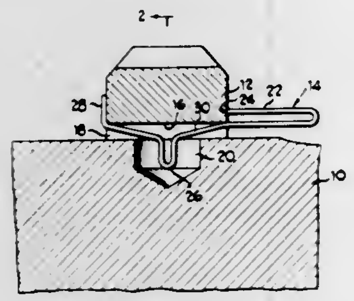


A construction element of the multiple tooth or nail type in which the long, narrow teeth are arranged in pairs, each tooth of each pair projecting in the same general direction substantially perpendicularly from a plate, being integral with the plate and being formed on one lateral edge only with a spur extending generally toward the mating tooth and with a relief region between the spur and the tooth base, the teeth being longitudinally dished in their facing surfaces and being twisted in a common direction so that the spurred edge of each tooth is advanced toward its mating tooth.

3,703,305
SPRING CLIP RETAINER

George L. Wise, and Mark A. Russ, both of Muncie, Ind., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed June 1, 1971, Ser. No. 148,373
Int. Cl. F16d *1/06*
U.S. Cl. 287—52.05 **1 Claim**

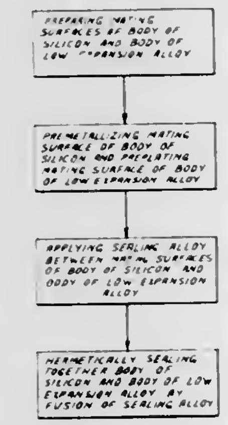


A spring clip formed with a stop means on one end, a bight to engage a shaft and a resilient end forming another stop means for detachably securing a hub to a shaft.

3,703,306
METHOD OF HERMETICALLY SEALING SILICON TO A LOW EXPANSION ALLOY

Murdock H. LaChance, Pasadena, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 9, 1970, Ser. No. 88,034
Int. Cl. C03c ; F16b *11/00*
U.S. Cl. 287—189.365 **5 Claims**


PREPARING MATING SURFACES OF BODY OF SILICON AND BODY OF LOW EXPANSION ALLOY
PREMETALLIZING MATING SURFACE OF BODY OF SILICON AND PREPLATING MATING SURFACE OF BODY OF LOW EXPANSION ALLOY
APPLYING SEALING ALLOY BETWEEN MATING SURFACES OF BODY OF SILICON AND BODY OF LOW EXPANSION ALLOY
HERMETICALLY SEALING TOGETHER BODY OF SILICON AND BODY OF LOW EXPANSION ALLOY BY FUSION OF SEALING ALLOY

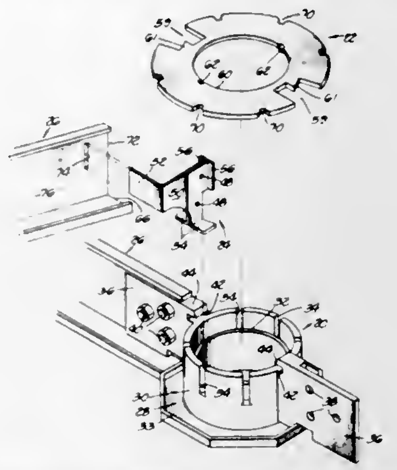
A surface of silicon is hermetically sealed to a surface of Kovar by coating the surface of silicon with several thin layers of silver, coating the surface of Kovar with a layer of copper, applying a tin-base sealing alloy between the two coated surfaces and then heating the tin-base sealing alloy so as to cause it to fuse to the two coated surfaces.

3,703,307
CONNECTOR STRUCTURE FOR SUSPENDED CEILINGS AND THE LIKE

Rolando T. Curtis, Los Angeles, Calif., assignor to Integrated Ceilings, Inc., Los Angeles, Calif.

Filed Oct. 16, 1970, Ser. No. 81,398
Int. Cl. F16b *7/04*
U.S. Cl. 287—189.36 R **8 Claims**

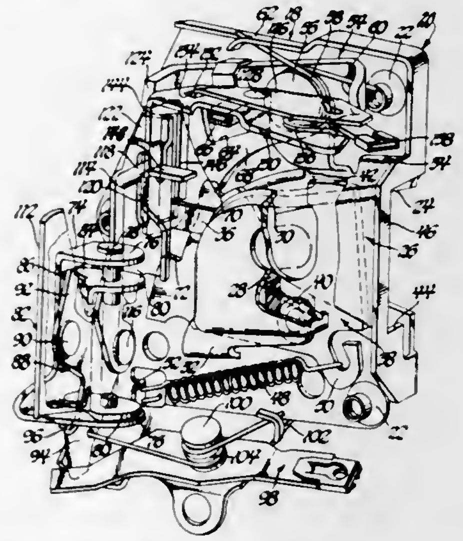
A connector structure for joining a plurality of support bars (e. g., "T-bars") of a suspended ceiling or the like in a desired pattern. The connector structure comprises a generally cup-shaped connector member having an outer peripheral wall provided with a plurality of upwardly opening slots. Connecting clips, which are designed to engage and retain the support bars forming the grid structure of the suspended ceiling, are inserted into the slots in the peripheral wall. The clips are maintained in place by an inner peripheral wall spaced radially inwardly from the outer peripheral wall of the connector member, and by a cover member releasably secured over the upper edge of the outer wall. Each connecting clip is provided with a tab designed to fit through a slot in the end of a ceiling panel support bar to join the support bar to the connector member.



3,703,308
CLOSURE LATCH

Edward E. Campbell, Sterling Heights, and Bela Sandor, Detroit, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 16, 1970, Ser. No. 89,686
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **5 Claims**

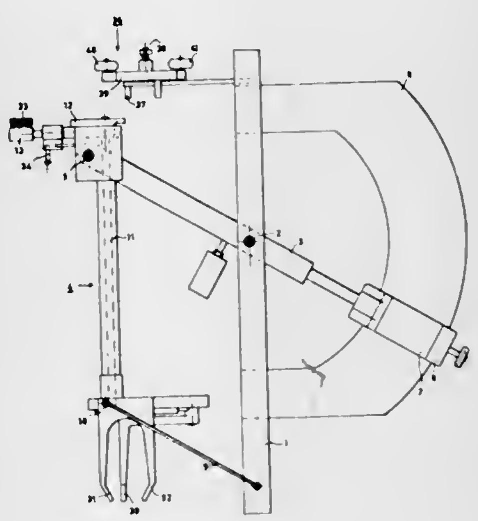


A closure latch includes a support frame on which is pivotally mounted an inverted fork bolt and a detent for maintaining the bolt in either of two latched positions. A generally Z-shaped operating lever is pivoted to a side flange of the frame at a juncture of the former. The other juncture of the operating lever is pivoted to one end of an elongated intermittent member for longitudinal translation thereof. The terminal legs of the operating lever are respectively engageable by an inside release lever and an outside release lever, the directions of engagement being opposite such that the release levers are alternately engageable with their respective legs. A lateral pin on the frame received within a slot on the intermittent member guides translatory movement of the intermittent member by the operating lever and independent swinging movement of the intermittent member relative to the operating lever between coupled and uncoupled positions with respect to the detent. A tab on the intermittent member is received within a slot of a locking lever which is supported on a cantilevered arm of the frame and movable between locked and unlocked positions. The locking lever in unlocked position locates the intermittent member in coupled position with respect to the detent, and in locked position locates the intermittent member in uncoupled position with respect to the detent.

3,703,309
AUTOMATICALLY DISCHARGING GRIPPER DEVICE

Jacob H. Mosterd, Stationsweg 117, Barneveld, Netherlands

Filed June 18, 1971, Ser. No. 154,477
Claims priority, application Netherlands, June 23, 1970, 7009235
Int. Cl. B25b *5/12*
U.S. Cl. 294—86 R **5 Claims**

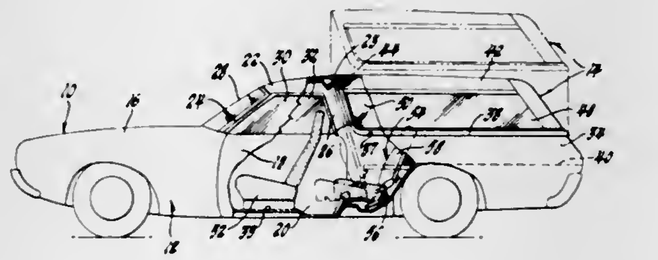


Gripper provided with an arm, which arm is resilient and can be closed by a spring, an axis provided with locking means being coupled with a pivotable arm, which via a resilient stretchable link is connected with a further pivotable arm and a rectilinear working spring device is acting upon one of the said pivotable arms.

3,703,310
DUAL CONFIGURATION VEHICLE BODY

Leonard A. Lystad, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 1, 1971, Ser. No. 148,777
Int. Cl. B60p *3/42*
U.S. Cl. 296—10 **4 Claims**

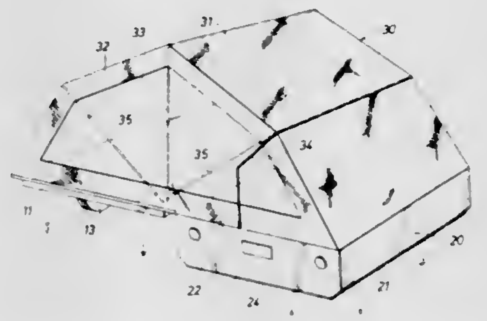


A primary vehicle body member having an open cargo compartment and a forward passenger cab with an open side adjoining the cargo compartment is adapted for conversion from the open configuration to a closed configuration by the installation of a removable secondary body member over the cargo compartment. A rear seat structure in the primary body member includes a seat back which is supported on the primary body member for pivotal movement between a retracted position wherein it cooperates with a seat base in comfortably supporting passengers and an extended position wherein it closes the lower portion of the open adjoining side of the cab. A partition is supported on the seat back for pivotal movement from a lowered position to a raised position above the seat back so that in the extended position of the seat back the latter cooperates with the partition in completely closing the adjoining side of the cab to thus insure the comfort of passengers in the cab when the secondary body member is removed.

3,703,311
TENT CAMPING TRAILER

Robert W. Davis, 4310 Goldfinch, Houston, Tex., and Karl L. Dahlstrom, 942 Ashwood, Lewisville, Tex., assignors to said Davis, by said Dahlstrom

Filed April 16, 1971, Ser. No. 134,582
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 R **10 Claims**

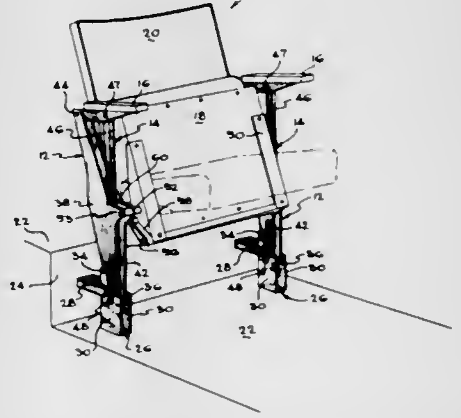


A tent camping trailer comprising a trailer frame mounted on a wheel and axle assembly and an enclosure having side and end walls and a top wall, pivotally attached along one side to one side of the frame, allowing the enclosure to be swung from a traveling position on the frame to a camping position along side the frame. A collapsible tent covering may be attached to the frame and enclosure with support members for erection of the covering when the enclosure is moved to the camping position. The enclosure top wall may be pivotally connected along one side of the enclosure.

3,703,312
COLLAPSIBLE ARM CHAIR

Howard D. Chapman, Highland Park, Ill., assignor to Clarin Corp., Chicago, Ill.

Filed Dec. 3, 1970, Ser. No. 94,807
Int. Cl. A47c *1/12*
U.S. Cl. 297—35 **2 Claims**



A chair is provided which is collapsible for pivotal movement about a generally horizontal axis between an erect position and a generally horizontally disposed position. The chair includes a selectively releasable latch for locking the chair in the erect position and means effective to prevent release of the latch and movement of the chair to the collapsed position when the chair is occupied.

3,703,313

SEAT, ESPECIALLY FOR MOTOR VEHICLES

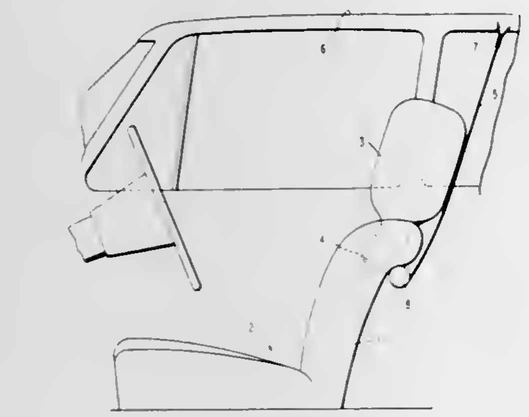
Gerhard Schiesterl, Stuttgart, and Helmut Wulf, Nellingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed July 29, 1971, Ser. No. 167,217

Claims priority, application Germany, July 29, 1970, P 20 37 565.9

Int. Cl. A47c *7/36*

U.S. Cl. 297—391 5 Claims



A seat, especially for motor vehicles, in which a gas cushion acting as headrest and automatically inflatable in case of an accident is arranged at the backrest of the seat; at least one belt is arranged behind the gas cushion for absorbing the rebound forces of the head of the passenger impinging against the gas cushion whereby the belt is arranged, on the one hand, within the area of the vehicle roof, and on the other, at the seat.

3,703,314

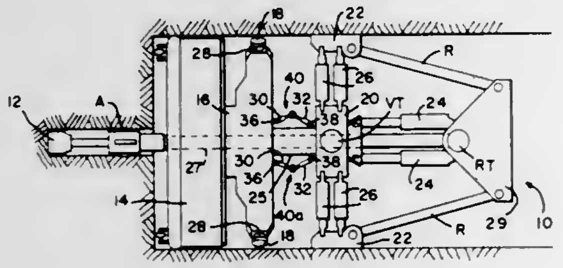
ROLL ATTITUDE CORRECTING MEANS, FOR TUNNELING MACHINES

William H. Hamilton, and Jack O. Winsor, both of Seattle, Wash., assignors to Lawrence Manufacturing Company, Seattle, Wash.

Filed Feb. 3, 1971, Ser. No. 112,259

Int. Cl. E01g *3/04*

U.S. Cl. 299—31 18 Claims



The method comprises holding only one of two relatively movable tunneling machine portions against movement and displacing the other portion about a tunneling machine boring axis, and then holding only the other portion and correspondingly displacing the one portion. The means comprise linkage members mutually joined and in which each one thereof is individually coupled to one of the machine portions, and means operative for effecting relative movement between the members.

3,703,315

APPARATUS FOR PLOWING LOOSE PARTICULATE MATERIAL

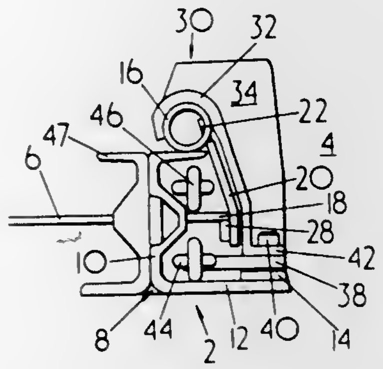
John Henry Trolley, Sandbach, England, assignor to Coal Industry (Patents) Limited, London, England

Filed Jan. 18, 1971, Ser. No. 107,251

Claims priority, application Great Britain, Jan. 20, 1970, 2,714/70

Int. Cl. E21c *27/32*

U.S. Cl. 299—34 10 Claims



Apparatus is provided for guiding a plow device along a long wall face armored conveyor on the face side thereof. The plow device is adapted to be hauled reciprocally by a chain along the length of the conveyor or a portion thereof. The apparatus includes an L-shaped elongate member which has an upright limb and a lower limb. The upright limb is securable to a side of the conveyor and the lower limb constitutes the base of the apparatus. The upright limb has secured along its upper edge a tube for guiding the device and a substantially continuous horizontal chain guide member extending therefrom to define upper and lower chain races. A cover plate is provided and is releasably secured to the tube in sealing relationship therewith to prevent contamination of the races by loose material. The cover plate abuts the free end of the chain guide member but is spaced from the lower limb of the elongate member such that in use a part of the plow device can extend through the space to engage a chain in the lower race to be driven thereby.

3,703,316

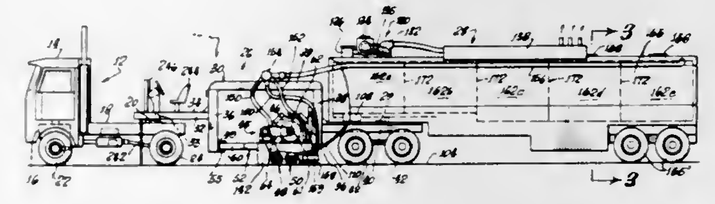
PAVEMENT CUTTING MACHINE

Cecil W. Hatcher, and Gene Warner, both of P.O. Box 1263, El Monte, Calif.

Filed March 1, 1971, Ser. No. 119,476

Int. Cl. E01c *23/09*

U.S. Cl. 299—39 22 Claims



A pavement cutting machine for cutting bumps or grooves. A tractor has a hitch with a cutter trailer and a tank trailer. The tank picks up the sludge from the cutter, filters it and recirculates the filtered water to the cutter. One or more hydraulic cylinders for the cutter or cutters act against a frame member which supports the tank whereby the weight of the tank snubs the cutter or cutters. The tractor has an alternative low speed drive from its engine. Alternative depth control is provided for the cutter for bump cutting or cutting grooves. The cutter is a single cutter or two cutters having overlapping shafts at their inner ends with the spacing between adjacent cutting disks the same as on each cutter for cutting grooves or

overlapped for cutting bumps. A floating beam carried by a frame supports one end or both ends of the cutter or cutters. The frame pivots on a horizontal axis on a header having a hitch with the tractor. Hydraulic cylinders act on the frame and on each floating beam to move them to active or idle position.

3,703,317

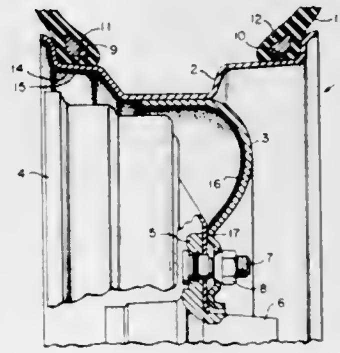
VEHICLE WHEEL AND BRAKE WITH HEAT SHIELD

Charles L. Laun, III, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 2, 1970, Ser. No. 85,998

Int. Cl. B60b *19/00*

U.S. Cl. 301—6 R 4 Claims



A heat shield coating on the surface of a wheel opposite form the tire bead seat surface and adjacent to the brake assembly to limit heat transmission into the wheel and then through the wheel into the bead of a tire mounted on the wheel. The heat shield coating can also be used on the outside surface of the brake housing to limit heat transmission into the housing. The heat shield coating can also be used on the outside surface of the brake assembly to limit heat transmission from the brake assembly.

3,703,318

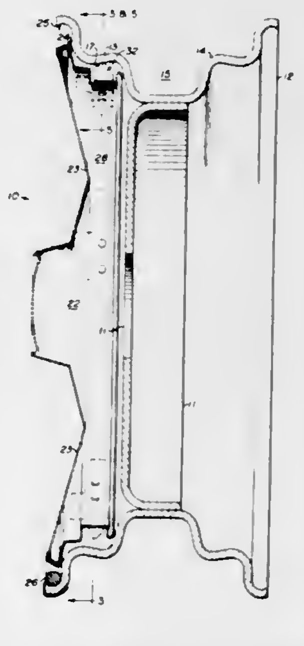
RETAINING MEANS FOR WHEEL TRIM MEMBERS

Claude J. Marshall, Ann Arbor, Mich., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 763,224, Sept. 27, 1968, abandoned. This application Sept. 28, 1970, Ser. No. 76,291

Int. Cl. B60b *7/06*

U.S. Cl. 301—37 R 2 Claims



A wheel trim member including a cover portion having a circular outer margin, a substantially rigid annular ring extending axially from the outer margin, and a plurality of independent, angularly spaced-apart retaining members for resiliently retaining the trim member on a wheel, each of the individual retaining members including a base secured to the rigid ring, at least one flexible portion projecting outwardly from the base to engage the wheel, and a substantially rigid portion extending radially outwardly from the base for limiting the deflection of the flexible portions under shock load conditions.

3,703,319

HYDRAULIC SYSTEMS FOR VEHICLES

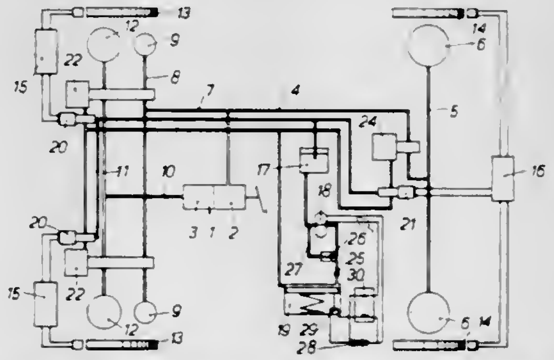
Brian Ingram, Balsall Common; David Anthony Harries, Solihull, and Lancelot Phoenix, Birmingham, all of England, assignors to Girling Limited, Birmingham, England

Filed Sept. 17, 1970, Ser. No. 73,081

Claims priority, application Great Britain, Sept. 17, 1969, 45,705/69

Int. Cl. B60t *8/06*

U.S. Cl. 303—21 F 20 Claims



In a vehicle hydraulic braking system fluid under pressure from a master cylinder is supplied to a wheel brake through a chamber of which the effective volume is variable between a minimum value and a maximum value by movement of a piston assembly working in a bore in communication with the chamber.

Means are included for normally subjecting the piston assembly to a supply of pressure fluid to urge the piston assembly into a first position in which the effective volume of the chamber is at the minimum value. A control valve is operative in response to a control signal to cause movement of the piston assembly in a second opposite direction to increase the effective volume of the chamber whereby the pressure of hydraulic fluid applied to the wheel brake is reduced.

3,703,320

BRAKING SYSTEM CONTROL AND ANTI-LOCK DEVICES

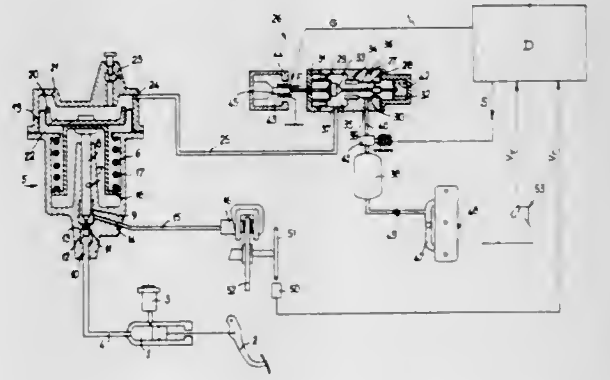
Jacques C. Remaud, and Pierre Bouthors, both of Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France

Filed Oct. 2, 1970, Ser. No. 77,589

Claims priority, application France, Oct. 17, 1969, 6935756

Int. Cl. B60t *8/06*

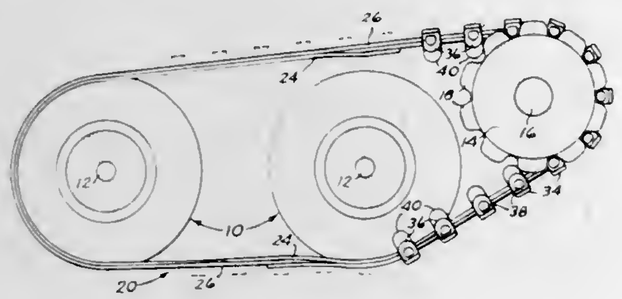
U.S. Cl. 303—21 F 5 Claims



This anti-lock device for the wheels of motor vehicles comprises a detector adapted to transmit a signal proportional to the slip of a wheel, a member for modulating said signal which is interposed between a source of vacuum and an expansion unit of the braking circuit. Said detector is adapted to compare two signals of which the magnitudes are proportional to the momentary speed of the wheel and to the real speed of the vehicle in relation to the ground, respectively, so as to energize said modulating member.

3,703,321
TRACK ASSEMBLY FOR TRACKED VEHICLES

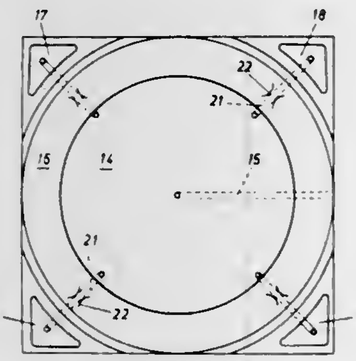
Richard H. A. Schoonover, West Linn, Oreg., assignor to Formac International, Inc., Seattle, Wash.
Filed July 31, 1970, Ser. No. 59,930
Int. Cl. B62d *55/24*
U.S. Cl. 305—38 **3 Claims**



A track assembly is designed for application to tracked vehicles having on each side a pair of longitudinally spaced support wheels and a pair of laterally spaced drive sprockets. There are two track assemblies, one on each side. Each assembly includes a pair of laterally spaced endless belts mountable about the wheels and sprockets. A plurality of grousers are fastened in longitudinally spaced relation transversely to the belts. A plurality of wheel guides are fastened to the inner surfaces of the grousers between the belts. The grousers and guides may be cast an integral units, simplifying the structural arrangement and improving its performance.

3,703,322
HYDROSTATIC BEARING

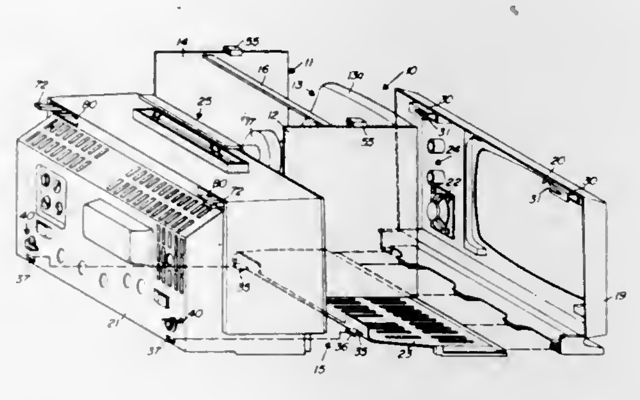
Anders Christer Gustafsson, Nymanegatan, Sweden, assignor to SKF Industrial Trading and Development Company, NV Amsterdam, Netherlands
Filed Sept. 22, 1971, Ser. No. 182,804
Claims priority, application Sweden, Sept. 23, 1970, 12909/70
Int. Cl. F16c *17/02*
U.S. Cl. 308—122 **3 Claims**



The bearing block of a hydrostatic bearing carrying a cylindrical shaft member is, beside the main, centrally located hydrostatic pocket provided with at least two auxiliary pockets located opposite to each other, outside the main pocket. Each of these auxiliary pockets is by way a passage provided with throttling means connected to the source of fluid supply, and an adjustment of the pressure within the auxiliary pockets is automatically obtained if the bearing is subjected to an obliquely directed load.

3,703,323
QUICK-RELEASE CONNECTOR ASSEMBLY FOR MULTIPLE MEMBER TELEVISION CABINET

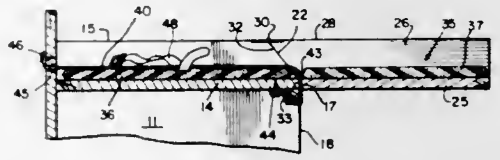
John D. Gallas, Roselle, and Richard J. Hofmeister, Arlington Heights, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed July 28, 1971, Ser. No. 166,795
Int. Cl. A47b *81/06;* **F16b** *12/00;* **H47b** *47/00*
U.S. Cl. 312—7 TV **9 Claims**



Interiorly mounted first and second connector means are provided for releasably attaching two separate housing members of a multiple housing member television cabinet. The second connector means is in the form of an elongated member having bi-directional movable opposite end portions and being slidably connected to one of the housing members through the provision of an arcuate groove extending both traversely and longitudinally with respect to the elongated member and a guide means captured within the groove for movement therealong. Exteriorly accessible motion transmitting means are connected to an end portion of the elongated member and are effective to impart movement to said elongated member in one direction along the groove for connecting the first and second connector means and in an opposite direction along the groove for releasing the first and second connector means.

3,703,324
CHEST

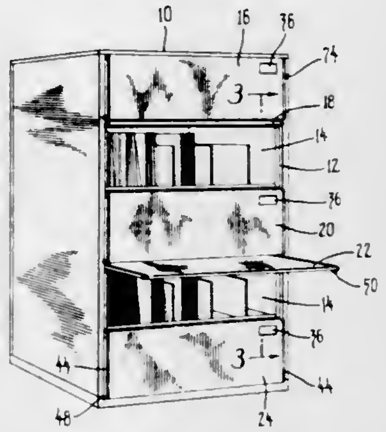
Lee E. Smith, c/o Smith Cabinet Manufacturing Co., Inc., Salem, Ind.
Filed Jan. 13, 1971, Ser. No. 106,166
Int. Cl. A47b *81/00*
U.S. Cl. 312—279 **6 Claims**



A cabinet having a pair of side panels interconnected by top and rear panels and each provided with a rearwardly angled portion along the upper portion of its front edge. A shelf assembly having a pair of side walls interconnected by a top wall is swingably connected to said side panels for movement between a retracted position in which said side walls are supported on the upper ends of the side panels and an extended position in which said shelf assembly projects outwardly from said side panels with said top panel and top wall in coplanar relationship. Said side walls are also provided with rearwardly angled edges engageable with said rearwardly angled panel portions for supporting said shelf assembly in extended position.

3,703,325
FILING CABINET CONSTRUCTION

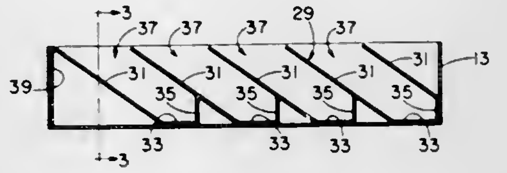
Howard A. Schnarr, Waterloo, Ontario, Canada, assignor to Massey-Ferguson Industries Limited, Ontario, Canada
Filed Nov. 13, 1969, Ser. No. 876,517
Int. Cl. A47b *88/00*
U.S. Cl. 312—307 **3 Claims**



A filing cabinet is provided with pivotable and slidable doors which may be retracted within the cabinet to provide access to the roll-out file drawers. The doors comprise sheet metal envelopes closed at the ends by unitary plastic end caps which each include a handle depression, a locking tab, and a stop tab for locating the doors in the closed and retracted positions. The door front surface is substantially entirely planar and includes an internal rigidifying structural member so that in a partially retracted position, the door may be utilized as a posting shelf. The cabinet further includes means for indicating the partially retracted position of the door.

3,703,326
DRAWER DIVIDER AND DRAWER ORGANIZER

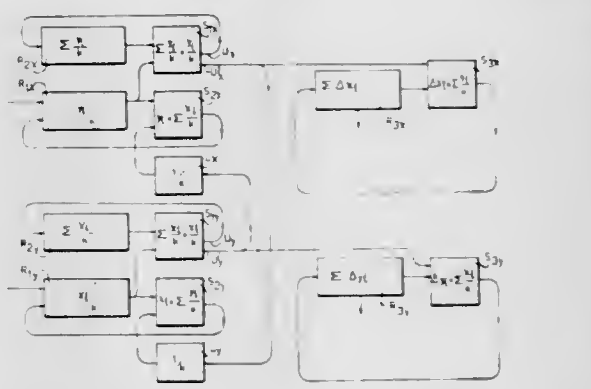
Marie Riviers, 117 River Street, Menasha, Wis.
Filed Aug. 9, 1971, Ser. No. 170,187
Int. Cl. A47b *88/20*
U.S. Cl. 312—330 **14 Claims**



The invention relates to means for dividing the elongated, side-by-side, main compartments which are usually provided in kitchen utensil drawers, silverware drawers, silver storage chests and the like, or which are provided by elongated drawer organizer trays, into a series of forwardly and downwardly inclined, sub-compartments of particular form. Specifically, these sub-compartments, which are open at the top, have the general form of a parallelepiped which is rectangular in cross section and which is partially truncated at its lower, forward end. The wall surfaces defining the sub-compartments provide, for each sub-compartment, a rectangularly shaped, open top; a downwardly and forwardly inclined utensil supporting, lower surface; a flat, horizontal bottom surface which extends parallel to the bottom surface of the main drawer or chest compartment; a vertical surface which extend transversely of the sub-compartment; spaced, vertically extending, parallel, side walls; and a flat, downwardly and forwardly inclined, upper wall surface for the sub-compartment which is spaced from and is parallel to the downwardly and forwardly inclined, utensil supporting, lower surface.

3,703,327
NUMERICAL CONTROL DEVICES

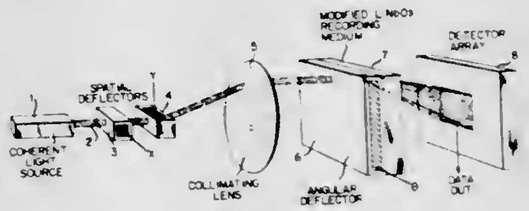
Piero Pomella, Piazza Balla, 14, and Luciano Lauro, Stradale Turin, 411, both of Ivrea, Italy
Continuation-in-part of Ser. No. 47,388, June 18, 1970, abandoned. This application Aug. 10, 1971, Ser. No. 170,491
Claims priority, application Italy, June 21, 1969, 52341 A/69
Int. Cl. G05b *19/24*
U.S. Cl. 318—571 **18 Claims**



A numerical control device for positioning a movable member includes an interpolation unit which effects numerical control by circular interpolation, approximating the arc of a circle by a series of straight line segments. Referred to the origin of the circle, the incremental displacement components required to move from any point (x_i, y_i) on the circle are shown to be y_i/K along the x-axis and x_i/K along the y-axis, where K is a predetermined factor. The interpolation unit operates in a succession of phases corresponding to said segments and includes means to divide said coordinates (x_i, y_i) by K, and means for summing said resultants to form summations $(\Sigma x_i/K, \Sigma x_i/K)$. The error in approximating to said arc is maintained below a predetermined maximum by starting a new interpolation phase whenever $\Sigma x_i/K$ or $\Sigma y_i/K$ reaches a predetermined value. The interpolation unit also includes means for summing the components Δx_i, Δy_i of the path segments corresponding to successive interpolation phases. To limit the speed of the member, the interpolation unit sums the incremental displacement components $(x_i/K, y_i/K)$ over a time cycle comprising several interpolation phases. The interpolation is stopped if the summation of either of the displacement components reaches a predetermined value corresponding to a maximum velocity component.

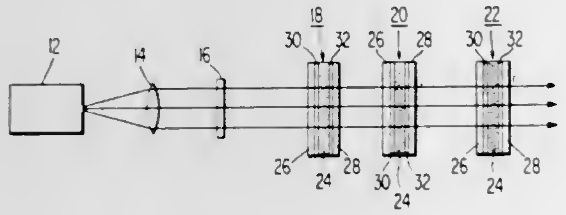
3,703,328
DEVICES UTILIZING IMPROVED LIMBO$_3$ HOLOGRAPHIC MEDIUM

Alastair Malcolm Glass, Millington, and George Earl Peterson, Short Hills, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 21, 1971, Ser. No. 164,506
Int. Cl. G02b *27/22*
U.S. Cl. 350—3.5 **9 Claims**



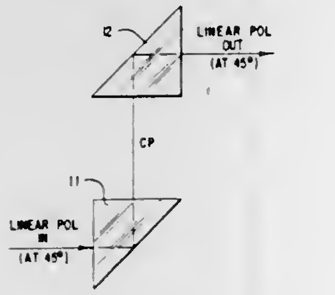
Volume holographic devices utilize lithium niobate, LiNbO$_3$, containing added iron ions. The added ions provide for improved resolution and contrast. Utilization is made of the improved material in devices designed for multiple image recording and readout. In a preferred embodiment, selection, as among images, is determined by the angle of incidence of the interrogating beam.

3,703,329
LIQUID CRYSTAL COLOR DISPLAY
Joseph Anthony Castellano, New Brunswick, N.J., assignor to RCA Corporation
Filed Dec. 29, 1969, Ser. No. 888,603
Int. Cl. G02f *1/26*
U.S. Cl. 350—150 **8 Claims**



A color display system capable of producing essentially all the colors of the visible spectrum comprises three cells each including a solution consisting of a pleochroic dye in a nematic liquid crystal composition. Each of the solutions can change its transmission of polarized white light in response to an electric field so as to change the color appearance of the solution. One solution of the system can change in appearance from color less to magenta, another from colorless to cyan, and a third from colorless to yellow. The system includes means for applying an electric field separately to each of the solutions and means for passing polarized white light successively through each solution.

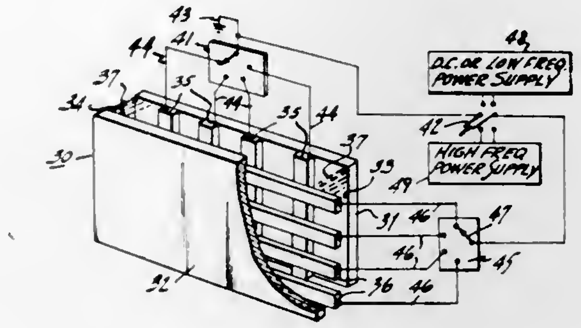
3,703,330
OPTICAL ROTARY JOINT
Philip J. Allen, North Forestville, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed June 15, 1971, Ser. No. 153,307
Int. Cl. G02f *1/24*
U.S. Cl. 350—157 **3 Claims**



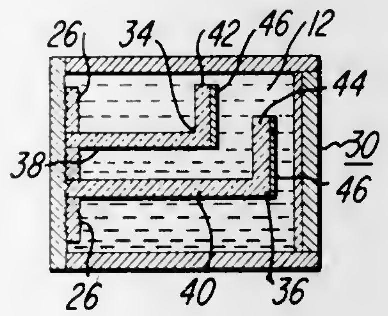
This disclosure is directed to means for transmitting a polarized optical beam between two parts of a system in relative rotation on different levels such that the output polarization does not change with relative rotation about a common axis. Such a system may be used for optical radar in which the laser transmitting is stationary on one level with the rotatable optical reflectors on another level.

3,703,331
LIQUID CRYSTAL DISPLAY ELEMENT HAVING STORAGE
Joel E. Goldmacher, Trenton, N.J., and George H. Heilmeier, Alexandria, Va., assignors to RCA Corporation, New York, N.Y.
Continuation of Ser. No. 690,309, Dec. 13, 1967, abandoned. This application Nov. 26, 1971, Ser. No. 202,580
Int. Cl. G02f *1/16*
U.S. Cl. 350—160 LC **10 Claims**

A liquid crystal element exhibiting storage of its light scattering state after removal of the electric current initiating the state comprises a mixture of cholesterol, a cholesterol derivative or a cholesteric liquid crystal compound with a nematic liquid crystal of the type that exhibits non-destructive turbulent motion when an electrical current of sufficient magnitude is passed therethrough.



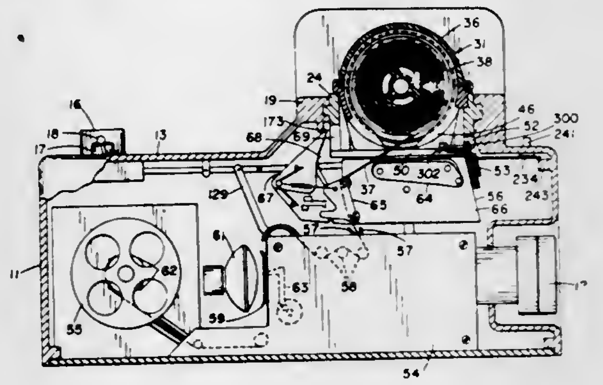
3,703,332
LIGHT MODULATOR AND DISPLAY DEVICE
George William Taylor, Princeton, N.J., assignor to RCA Corporation
Filed March 30, 1971, Ser. No. 129,393
Int. Cl. G02f *1/30*
U.S. Cl. 350—160 CR **10 Claims**



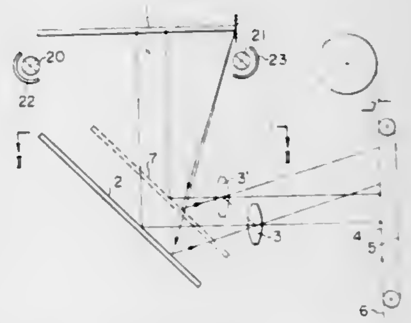
A device which can be switched between a light-scattering and a non light-scattering condition comprises, in an element thereof, a volatile liquid and a container having a front viewing face and a darkened back face. The front viewing face has a rough inner surface with a transparent thin resistive layer over the rough surface. The resistive layer takes on the rough surface configuration of the front face. In operation, a current is passed through the resistive layer to heat the volatile liquid until it boils. The rough surface provides a multiplicity of nucleation sites for boiling of the liquid. When the liquid boils, the device scatters light and appears white to the viewer. When the liquid is in its quiescent state, light passes through the front face and the liquid without substantial scattering and the device appears dark due to the darkened back face.

3,703,333
CINEMATOGRAPHIC CARTRIDGE PROJECTOR APPARATUS
John J. Bundschuh; Robert J. Roman, and Kenneth W. Thomson, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Division of Ser. No. 643,502, June 5, 1967. This application May 13, 1970, Ser. No. 48,635
Int. Cl. G03b *1/56*
U.S. Cl. 352—157 **18 Claims**

An apparatus, such as a cinematographic projector, for use with cartridges containing rolls of strip material and in which the cartridges may be selectively and/or automatically moved in sequence into operation position, the projector also being capable of use with individual cartridges containing rolls of strip material. In operating position the strip material is automatically moved out of the cartridge by means of a stripper mechanism and directed to an automatic threading mechanism of the apparatus, and then rewound into the cartridge after the strip material has been displayed.



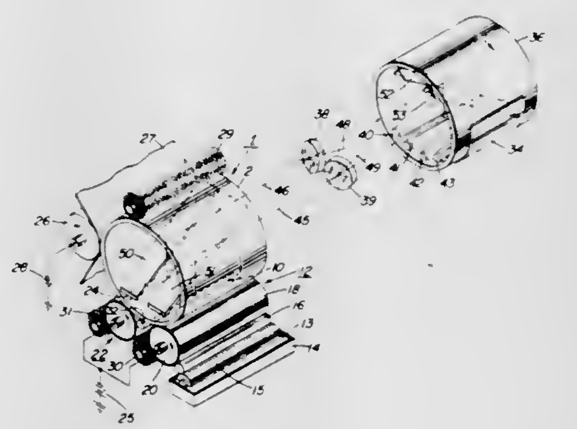
3,703,334
ELECTROPHOTOGRAPHIC APPARATUS
Wilhelm Josef Knechtel, Paulinen Str. 24, Rodheim, and Detlef Schaffer, Kornmarkt 6, Wetzlar, both of Germany
Filed July 13, 1970, Ser. No. 54,335
Claims priority, application Germany, July 14, 1969, P 19 35 617.3
Int. Cl. G03g *15/00*; **G03b** *27/34*
U.S. Cl. 355—11 **5 Claims**



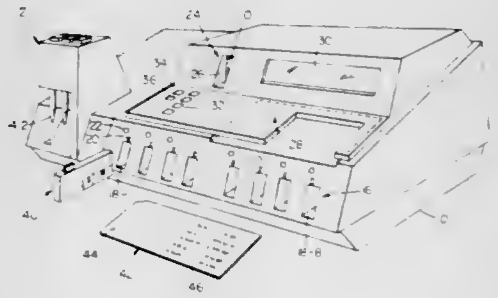
The system includes a first mirror for reflecting light images onto the photosensitive member in first magnification and a second mirror selectively movable from an inoperative to an operative position for reflecting light images onto the member in second magnification different from the first magnification. The system also includes a lens selectively movable to focus the image applied to the photosensitive member by the operative mirror.

3,703,335
MULTIPLE EXPOSURE IMAGING APPARATUS
Sanford G. Hoffman, Rochester; Earl V. Jackson, Penfield; Gary K. Starkweather, and Edwin Zucker, both of Rochester, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Dec. 22, 1969, Ser. No. 887,453
Int. Cl. G03b *27/32*; **G03g** *15/00*
U.S. Cl. 355—51 **20 Claims**

A machine for automatically making a plurality of superposed exposures optical input from a moving object cylinder carrying a document to a synchronously moving transparent electro-conductive image cylinder for forming the images. Internal to both the cylinders is an optical system for projecting contiguous portions of the object onto a plurality of locations on the image cylinder each in superposed registration. The optical systems are aligned such that a presentation of a point from the object to the image cylinder at one portion of the surface is repeated at the same portion of the surface after the surface has moved from its original position. The optical systems each have a skewed lens and a plane and roof mirror for projecting transferable images without keystone distortion. An embodiment uses the optical re-imaging system for forming photoelectrophoretic images.



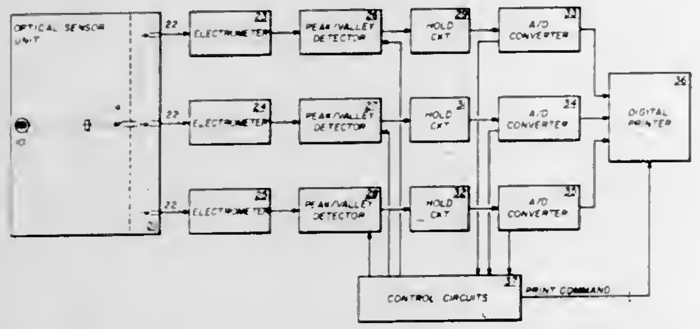
3,703,336
ANALYSIS SYSTEM EMPLOYING A PLURAL CHAMBER CUVETTE STRUCTURE
Thomas A. Rosse, Lexington; David E. Blackmer, Harvard; Jerrold Zindler, Cambridge, and Thomas F. Kelley, Canton, all of Mass., assignors to Instrumentation Laboratory, Inc., Lexington, Mass.
Filed June 12, 1970, Ser. No. 45,758
Int. Cl. G01n *21/24*
U.S. Cl. 356—39 **29 Claims**



An analysis system includes a plural chamber cuvette assembly that holds chemical materials and is adapted to receive an unknown to be analyzed in one of the chambers, a record that specifies information as to the nature of the stored chemical material and the type of analysis to be performed, and photometric instrumentation for performing a chemical analysis that responds to the material in the sample chamber in the cuvette assembly and the record. The instrument is automatically calibrated in response to information specified by the record and an analysis is performed automatically merely in response to the operation of a single control.

3,703,337
ANALYZER PROCESSING AND RECORDING TECHNIQUE
Eric Neugroschel, Fort Lee, N.J., and Alexander Scott Paterson, Nutley, N.J., assignors to Hoffmann La Roche Inc., Nutley, N.J.
Filed Jan. 4, 1971, Ser. No. 103,546
Int. Cl. G01n *21/22*
U.S. Cl. 356—178 **9 Claims**

An apparatus and method for processing and recording data derived from a specimen analyzer for at least two characteristics of the specimen where each of the characteristics is separately detected and stored and then all of the characteristics are simultaneously measured and converted for digital print out.

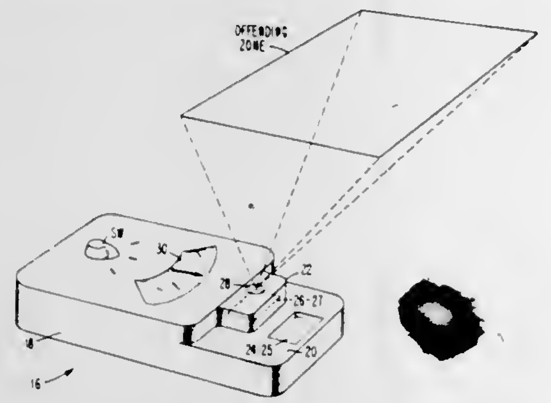


3,703,338
VEILING REFLECTION AND ILLUMINATION METER
Edwin J. Breneman, Wappingers Falls, N.Y., assignor to Kollmorgen Corporation, Hartford, Conn.

Filed May 6, 1971, Ser. No. 140,884

Int. Cl. G01j *1/42*

U.S. Cl. 356—222 **2 Claims**



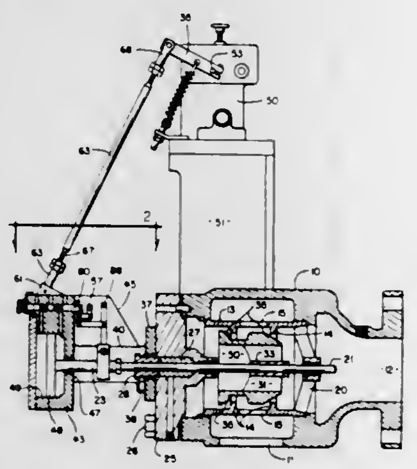
The tendency of illumination on a study desk task to produce veiling reflections is measured by a meter connected to two photocells arranged to measure both the total illumination and the portion thereof that will produce veiling reflections.

3,703,339
TURBINE SPEED CONTROL SYSTEM
Charles C. Czuszak, Greensburg, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Filed March 10, 1971, Ser. No. 122,846

Int. Cl. F01b *25/06*

U.S. Cl. 415—36 **1 Claim**



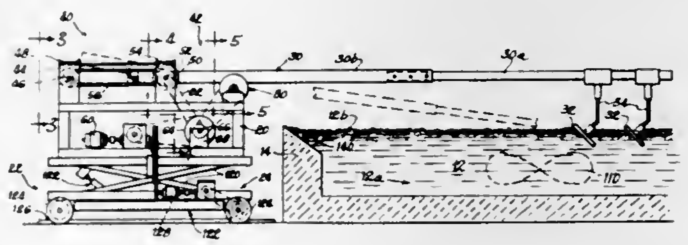
In the speed control mechanism of this invention, the piston rod of a fluid operated Servo motor is connected to the steam supply valve. The turbine governor is directly connected to the pilot control valve of the Servo motor by a linkage assembly, a portion of which is connected to the piston rod and functions upon operation of the pilot control valve by the governor to return the valve to normal position when the turbine speed has been returned to the set point.

3,703,340
MECHANICAL PUDDLER
David Salmon, Frankfort; Edward J. Wierzbicki, Lansing, both of Ill.; Benny Langston, Crown Point, Ind., and Donald W. Beegle, Russellville, Ala., assignors to U.S. Reduction Co.

Filed Oct. 9, 1970, Ser. No. 79,561

Int. Cl. B01f *11/00*

U.S. Cl. 416—79 **7 Claims**



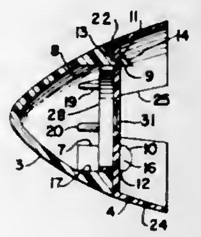
A mechanical puddler for stirring a melt within a furnace and including an elongated member carried by a frame and having a stirring mechanism connected to a free end thereof with drive means cooperating with the member for moving the paddle in a closed loop having a figure eight configuration. The frame is capable of being raised and lowered relative to the upper surface of the melt and moved parallel to the surface to act as a mechanical skimmer.

3,703,341
PROPELLER SPINNER FOR MODEL AIRPLANES
Dominic Garofalo, 50 Eder Terrace, South Orange, N.J.

Filed April 8, 1971, Ser. No. 132,400

Int. Cl. B64c *11/14*

U.S. Cl. 416—245 **6 Claims**



An impact absorbing, economical to manufacture, easily installed and removed propeller spinner for model airplanes comprising a forward portion and a rear portion joined together through a self-aligning locking means with the blades of the propeller for the model airplane passing outwardly through the rear portion which is supported from the propeller shaft with the forward portion being supported from it.

3,703,342
FUEL PUMP BELLOWS CONSTRUCTION
Alton J. O'Connor, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.

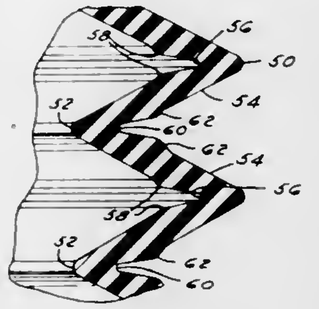
Filed July 30, 1971, Ser. No. 167,651

Int. Cl. F04b *35/00;* **F01b** *19/00;* **B65d** *37/00*

U.S. Cl. 417—326 **9 Claims**

A one-piece pump bellows of a flexible, resilient material with a corrugated generally cylindrical sidewall having a plurality of interleaved outer and inner bends with interconnecting wall portions. The corrugated wall is not of uniform thickness and the thickness at the bends of the wall is greater

than the maximum thickness of the interconnecting wall portions. The thickness of the interconnecting wall portions immediately adjacent the bends is less than the maximum thickness of the interconnecting wall portions. The outer bends have associated pairs of opposed circumferential ribs on the inside surface of the interconnecting walls and the inner bends have associated pairs of opposed circumferential ribs on the outside surface of the interconnecting walls. The pairs of opposed ribs are adapted to abut when the bellows is foreshortened by overstroking which decreases the maximum stress to which the bends are subjected and substantially increases the service life of the bellows.

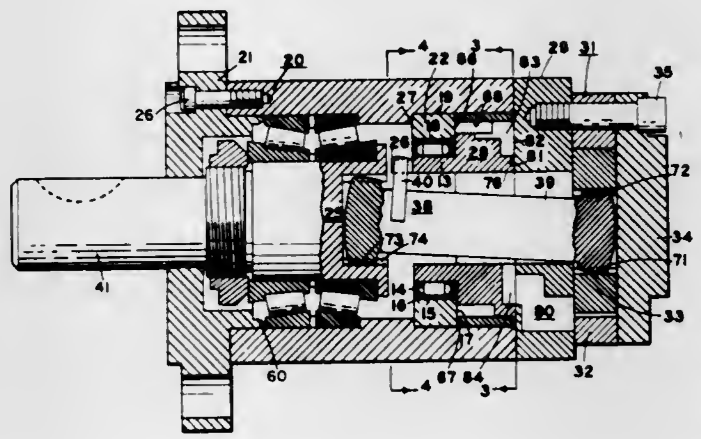


3,703,343
BEARING SUPPORT MEANS AND DRIVE FOR ROTARY VALVE IN FLUID PRESSURE DEVICE
George V. Woodling, 22077 West Lake Road, Rocky River, Ohio

Continuation of Ser. No. 829,268, June 2, 1969, Pat. No. 3,531,226, which is a continuation of Ser. No. 684,705, Nov. 21, 1967, abandoned. This application June 10, 1970, Ser. No. 44,998

Int. Cl. F01c *1/02;* **F03c** *3/00;* **F04c** *1/02*

U.S. Cl. 418—61 **5 Claims**



The rotary valve is especially adapted to operate in a fluid pressure device having a stator element and a rotor element constituting a fluid stator-rotor mechanism, in which the stator element has a fixed axis and in which the rotor element has a movable axis with said rotor element having a rotational movement about its own axis and an orbit movement about the fixed axis. The rotary valve has a hollow shaft extending therefrom. Bearing support mans having first and second sides rotatively supports the hollow shaft with the rotary valve disposed on the second side of the bearing support means. Actuating means drives the rotary valve from the rotor element with the actuating means engaging the hollow shaft from the first side of the bearing support means. The bearing support means preferably comprises anti-friction bearings. The actuating means may embody rotational phasing.

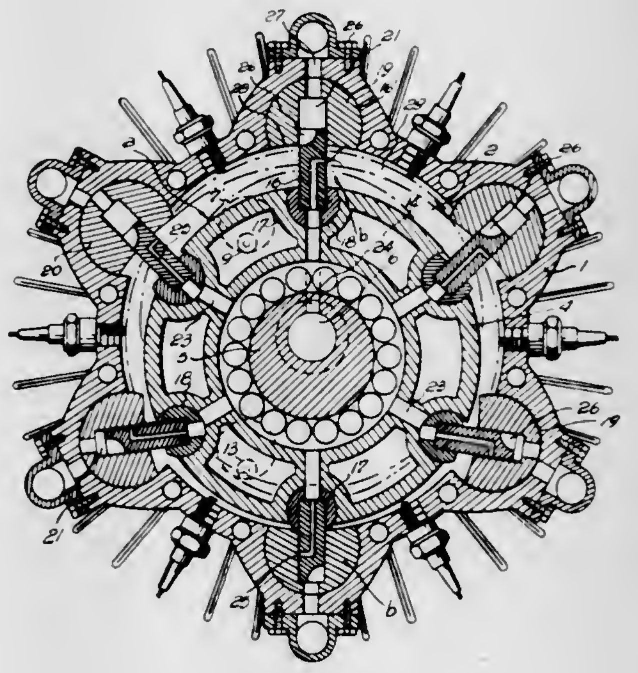
3,703,344
INTERNAL COMBUSTION ROTARY ENGINE
Teodoro Reitter, Fray Justo Sarmiento 2507, Buenos Aires, Argentina

Filed Jan. 27, 1971, Ser. No. 110,114

Claims priority, application Argentina, Jan. 30, 1970, 226719

Int. Cl. F01c *1/02;* **F03c** *3/00;* **F04c** *1/02*

U.S. Cl. 418—61 **3 Claims**



An improved internal combustion rotary engine, of the kind wherein a housing contains in a cylindrical bore a control body effecting an oscillating cycle creating a series of combustion chambers, has at least three crank-shaped bodies placed intermediate the contacting surfaces between the end covers of said cylindrical bore and the central body sides; said crank-shaped bodies are equidistantly arranged, partially and freely housed in respective recesses hollowed out in said covers, eccentric appendices of which, jutting out from the surfaces thereof, are freely included within respective recesses hollowed out from the central body sides, said central body also having radially and equidistantly arranged a plurality of swivelling dividing bodies associated with the surface of the housing internal cylindrical space; each of said dividing bodies, having a parallelepiped quadrangular and flattened configuration, is integral with a basic semi-circular cross-section body, freely included in a corresponding hollow of coincident cross-section cut off from the central body, while the upper portion of said dividing body swivellingly enters into a space offered by a further head body, also having a semi-circular cross-section and equally included in a coincident cross-section hollow existing in the housing wall; said dividing basic and head bodies being interiorly provided with conduits associated with exhaust and injection operations.

3,703,345
APPARATUS FOR CONTINUOUS MIXING OF TWO LIQUID AGENTS TO OBTAIN A FOAMED SYNTHETIC PRODUCT
Herbert Giesemann, Don Boscostr. 3, 53 Bonn, Germany

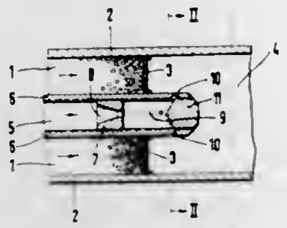
Filed June 12, 1970, Ser. No. 45,761

Claims priority, application Germany, June 12, 1969, P 19 29 887.4

Int. Cl. B29d *27/04*

U.S. Cl. 425—4 **13 Claims**

Apparatus for continuously forming a foamed synthetic resin product comprises concentric conduits for feeding foam material in the outer conduit and aqueous synthetic resin solution in the inner conduit. The inner conduit includes a nozzle and an impingement device for atomizing the stream of the



aqueous synthetic resin solution after which it is projected into the foam material to form the foam product.

3,703,346
MOLD FOR VULCANIZING PRE-SHAPED PNEUMATIC TIRES

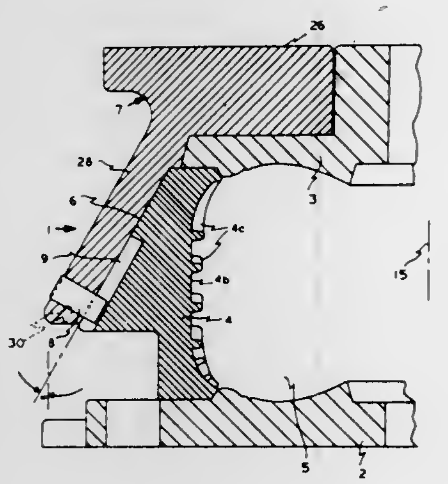
Francois Fernand Deboeur, Liege, and Leon Paul Jean Plumhans, Grivegnee-Liege, both of Belgium, assignors to Uniroyal Aktiengesellschaft, Aache-Rothe-Erde, Germany

Continuation-in-part of Ser. No. 92,699, Nov. 25, 1970, abandoned. This application Jan. 13, 1972, Ser. No. 217,489

Claims priority, application Germany, April 17, 1971, P 21 18 647.0; Nov. 29, 1969, P 19 59 982.7

Int. Cl. B29h *5/02*

U.S. Cl. 425—46 **21 Claims**



This is a mold for vulcanizing pre-shaped tires, in which a plurality of tread-forming mold segments are axially and radially guided into "mold open" and "mold closed" positions, while achieving continuous extended guide surface engagement. A circular actuator slidingly supports the tread-forming mold segments in a circular distribution about the mold axis. Cooperating curved guide surfaces are formed on the actuator and on the segments, and are oriented parallel with the sliding direction of the segments. The curved guide surfaces are selectively inclined relative to the mold axis to obtain a radial component of mold segment motion with axial movement of the actuator. Extended curved surface contact between guide surfaces is maintained throughout mold opening and closing motion, to achieve enhanced structural support and restrict the entry of dirt between the guide surfaces.

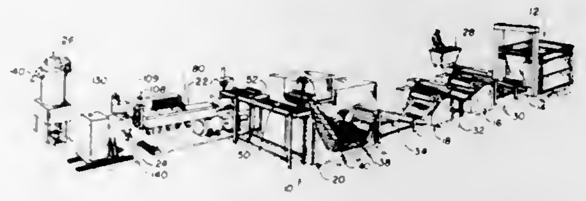
3,703,347
WASTE RECOVERY OF THERMOPLASTIC CONTINUOUS FILAMENTARY MATERIAL

Robert Hester, and Howard P. Pierson, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 27, 1970, Ser. No. 67,324

Int. Cl. B29d *7/02;* **B29f** *3/02*

U.S. Cl. 425—67 **12 Claims**



Apparatus for recovering waste thermoplastic fiber of continuous length filamentary material and converting it into re-useable feed stock and particularly a large otherwise unmanageable, entangled mass of continuous length filamentary material, some or all of which being either drafted or undrafted, wherein the continuous length filamentary material is converted into random length staple fiber, the staple fiber is then mechanically compacted and melted into a melt flow, and the melt flow is finally extruded as the re-useable feed stock.

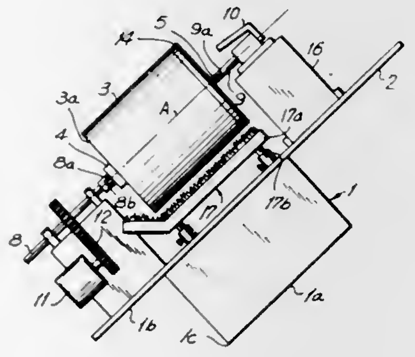
3,703,348
APPARATUS FOR MOLDING HOLLOW OBJECTS FROM THERMOPLASTIC MATERIALS

Stewart Pivar, Muttontown, Long Island, N.Y., assignor to Rototron Corporation, Farmingdale, N.Y.

Continuation of Ser. No. 724,082, April 29, 1968, abandoned. This application Oct. 27, 1970, Ser. No. 84,503

Int. Cl. B29c *5/04*

U.S. Cl. 425—173 **6 Claims**



Apparatus is provided for molding thermoplastic articles in hollow form in which a frame or stand is provided which has two stable positions. These are selectively employed to hold a mold in inclined or horizontal attitudes, the mold being provided with an open end on which is placed a cover with an opening therein so that access to the interior of the mold is possible. Thermoplastic material is placed in the mold which is heated so that the material fuses to the mold and the article is thereby formed. Access to the interior of the mold permits improved control over the formation of the objects being molded and permits various possibilities such as forming articles with stripes therein or with mechanical parts incorporated into the object.

3,703,349
GROUND FLARE

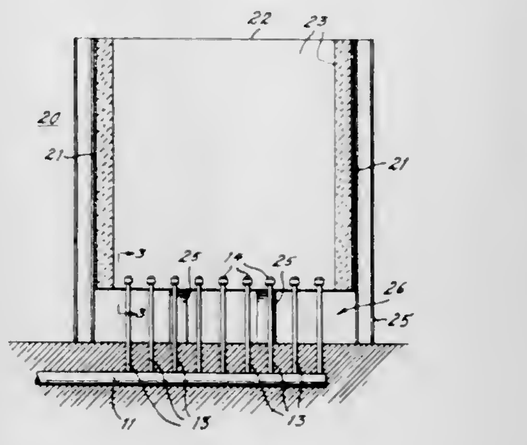
John F. Straitz, III, Cheltenham, Pa., assignor to Combustion Unlimited, Incorporated, Elkins Park, Pa.

Filed May 17, 1971, Ser. No. 143,947

Int. Cl. F23d

U.S. Cl. 431—202 **6 Claims**

A ground flare is provided for incinerating waste combustible gas from refineries and the like in which the waste gases are conducted underground to and through horizontal gas supply pipes on which vertical gas supply pipes having nozzles at their upper ends are mounted. The nozzles deliver the gases for burning within a refractory lined vertical rectangular enclosure to which air is admitted at the bottom and the



products of combustion discharged at the top, the flare being free from operating difficulties heretofore encountered.

CHEMICAL

3,703,350
DYEING SYNTHETIC POLYAMIDES WITH 1,4-DI-(HYDROXYALKYLAMINO)ANTHRAQUINONES

Paul Buecheler, Reinach, Basel-Land, and Karl Ulrich Steiner, Binningen, Basel-Land, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

No Drawing. Filed June 29, 1970, Ser. No. 50,955

Claims priority, application Switzerland, July 18, 1969, 11,032/69

Int. Cl. C09b *1/28;* **D06p** *1/20*

U.S. Cl. 8—39 **9 Claims**

A process for the dyeing and printing of synthetic polyamides with dyes of the 1,4-di-(hydroxyalkylamino)-anthraquinone series, in which the synthetic polyamides may be present in the form of filament, yarn or in any of the textile forms produced therewith.

3,703,351
TWO STEP MODIFICATION OF TEXTILE MATERIALS

Michael V. Lock, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

No Drawing. Continuation of application Ser. No. 691,655, Dec. 18, 1967, which is a continuation-in-part of application Ser. No. 244,275, Dec. 13, 1962. This application Feb. 20, 1970, Ser. No. 14,712

Int. Cl. D06m *15/54, 15/70*

U.S. Cl. 8—116.3 **5 Claims**

Textiles composed of cellulosic fibers or blends of cellulosic and synthetic fibers are modified to improve the flat drying properties thereof through treatment with polyfunctional reactants having at least one acid catalyzable and at least one alkaline catalyzable group. Either the acid catalyzed or the alkaline catalyzed reaction may be conducted first. The reactions may be conducted in the wet or dry state. The alkaline catalyst used may be one which is substantially neutral when initially applied to the textile but becomes strongly alkaline at elevated temperatures. A reducing agent may be added to the treating bath to inhibit yellowing of the textile material under curing conditions. An aminoplast resin may be included in the treating bath. Active hydrogen containing compounds may be appended to the textile through reaction with reactive groups bound to the textile by the initial reaction between the polyfunctional compound and the textile.

3,703,352
TREATMENT OF KERATINOUS FIBRES AND FABRICS

Bryan Dobinson, Duxford, Paul Hope, Saffron Walden, Kenneth Winterbottom, Whittlesford, and Trevor Shaw, Ilkley, England, assignors to Ciba-Geigy AG, Basel, Switzerland, and I.W.S. Nominee Company Limited, London, England

No Drawing. Filed Nov. 9, 1970, Ser. No. 88,246

Claims priority, application Great Britain, Nov. 14, 1969, 55,992/69

Int. Cl. D06m *3/02*

U.S. Cl. 8—128 A **20 Claims**

A process for modifying keratinous material which comprises

(1) treating the material with an ester which contains at least two mercaptan groups per molecule and which is a product of the reaction of
  (a) at least one monomercaptomonocarboxylic acid or monomercaptomonohydric alcohol,
  (b) at least one compound containing, per molecule, at least two alcoholic hydroxyl groups or at least one 1,2-epoxide group, and
  (c) at least one compound containing, per molecule, at least two carboxylic acid groups, or an anhydride thereof, and
(2) curing the ester on the material.

By this process the keratinous material is rendered resistant to shrinkage, and durable press characteristics are imparted to it. Keratinous material so treated is washable without essential lost of its finish and keeps its smooth handle.

3,703,353
GASEOUS DIFFUSION PAPER DEACIDIFICATION

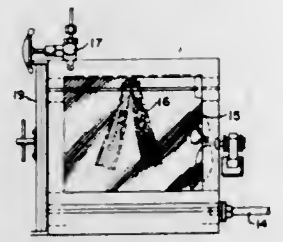
James E. Kusterer, Jr., and John D. Hind, Richmond, Va., assignors to Council on Library Resources, Inc., Washington, D.C.

Filed Apr. 15, 1971, Ser. No. 134,309

Int. Cl. A61l *13/00*

U.S. Cl. 21—58 **17 Claims**

Paper, for example having a pH of about 5.0 or lower, is rendered resistant to the deterioration that is promoted by acidic conditions in paper by impregnating the paper, for example in the form of a book, with gaseous hexamethylenetetramine. Preferably, the hexamethylenetetramine is formed by reacting gaseous ammonia with gaseous formaldehyde, and such reacting can either be effected while the reactants are in contact with the paper or be carried out in a zone apart from the impregnation zone and the hexamethylenetetramine product vapors then conducted to the impregnation zone.



ERRATUM

For Class 21—2.5 see:
Patent No. 3,703,587

3,703,354
METHOD OF PRODUCING HYDRAZINE

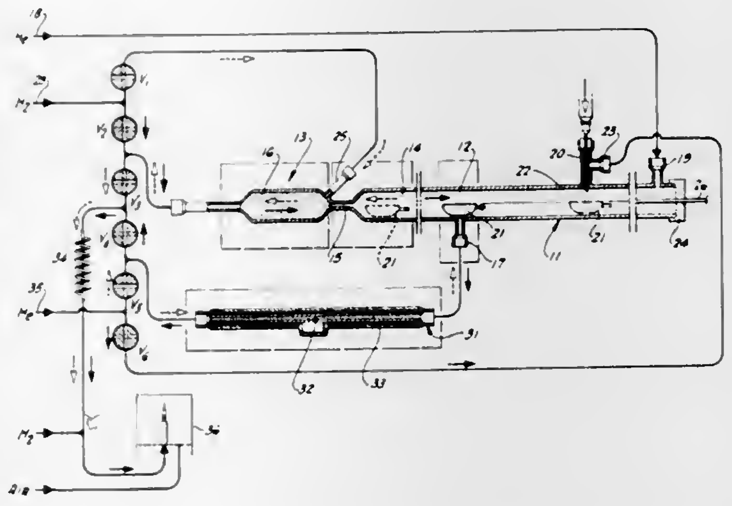
Nikolai Timofeevich Denisov, Oleg Nikolaevich Efimov, Viktor Fedorovich Shuvalov, and Natalia Ivanovna Shuvalova, Moskovskaya Oblast, and Alla Konstantinovna Shilova and Alexandr Evgenievich Shilov, Moscow, U.S.S.R., assignors to Filial Ordena Lenina Institut Khimicheskoi Fiziki ANSSR, Moskovskaya, U.S.S.R.
No Drawing. Filed Aug. 26, 1970, Ser. No. 67,218
Claims priority, application U.S.S.R., Jan. 12, 1970, 1,387,563
Int. Cl. C01c *1/00*
U.S. Cl. 423—407 **7 Claims**

Gaseous nitrogen is reduced by reducing agents which are chlorides or sulphates of trivalent titanium, bivalent chromium, or bivalent vanadium, in the medium of water, methanol, ethanol, or a mixture of said solvents. The temperature of the process is 20–100° C., nitrogen pressure is 1–150 atm., pH of the medium is not lower than 8. In case of using compounds of the two said first metals as reducing agents, the process is carried out in the presence of molybdenum pentachloride, molybdenum oxytrichloride, sodium molybdate or potassium molybdate. Said method ensures an increase in the yield of the desired product for the reducing agent employed (up to 75 mol. percent) and allows the use of reducing agents that are not sensitive to moisture and easy to regenerate, as well as the use of inexpensive solvents.

3,703,355
PYROLYSIS AND ANALYSIS SYSTEM

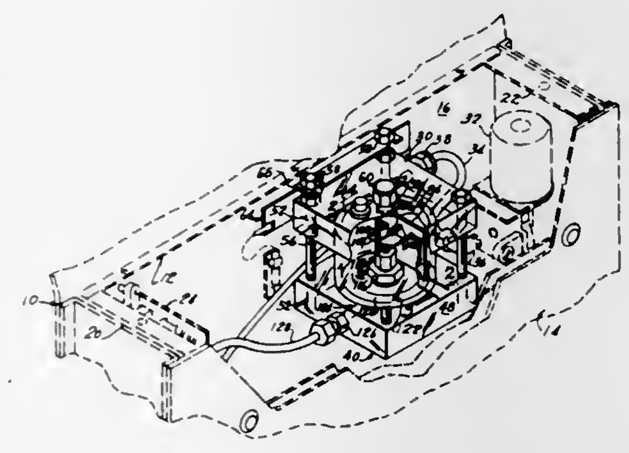
Yoshihiro Takahashi, San Francisco, Robert T. Moore, Palo Alto, and Thomas M. Stephens, Menlo Park, Calif., assignors to Dohrmann Division, Envirotech Corporation, Mountain View, Calif.
Filed Dec. 10, 1971, Ser. No. 206,839
Int. Cl. G01n *31/10, 31/12*
U.S. Cl. 23—230 PC **28 Claims**

A method and apparatus for directly selectively analyzing organic carbon or other predetermined compounds in a sample-containing fluid such as wastewater. The organic carbon in the wastewater sample is either oxidatively pyrolyzed to carbon dioxide or reductively pyrolyzed to methane, which products are then analyzed. Prior to pyrolysis, the inorganic carbonate and bicarbonate salts present in the water are removed by acidification to carbonic acid and vaporization of the carbon dioxide component in a volatilization zone. The vapors, including certain volatile organic carbon compounds, are directed in a carrier gas through a packed detention column for sorption of the organic carbon compounds on the packing while the carbon dioxide is vented. Thereafter the carrier gas flow is reversed and the sorbed compounds are desorbed and conveyed to a pyrolysis zone wherein they are pyrolyzed along with the unvaporized sample and converted to a gaseous pyrolysis product which is quantitatively analyzed. The wastewater may be supplied in a boat to the volatilization zone and the boat moved into the pyrolysis zone during pyrolysis.



3,703,356
PORTABLE FLAME IONIZATION GAS LEAK DETECTOR

Bob A. Carter, Atlanta, Ga., assignor to Southern Cross Corp., Atlanta, Ga.
Filed Jan. 20, 1971, Ser. No. 107,970.
Int. Cl. G01n *31/12*
U.S. Cl. 23—254 EF **7 Claims**



A detector unit for a portable flame ionization gas leak detector operating from relatively low voltage battery power and typically capable of field operation in excess of one day without recharging the fuel supply or the battery power supply. The basic electronic circuitry primarily utilizes solid state devices and a meter or other detection device is tied across two points of circuitry utilizing a principle similar to the well known electronic Wheatstone bridge employing electronic devices in each of four legs which may be resistors, capacitors, field effect transistors or other devices which react to non-electronic conditions such as thermocouples or ion chambers. The bridge is electronically balanced and the portion known as a detector side is set up to vary its electronic characteristics relative to the outside influence the circuit intends to detect. A change in the outside influence will unbalance the bridge causing current to flow thus indicating detection. The combination of very low voltage and extremely high resistors make the unit susceptible to varying temperature and humidity conditions which is minimized through the use of the physical inclusion of a portion of the bridge circuit inside an ion cell in the physical form of a plastic cylinder capped by two heavy plastic caps one on each end with suitable sealing means and gasketing at the points of closure. Electrical terminals are sealed in the plastic and suitable conduits are provided through the plastic for the entry of the gas. Resistors and other components are mounted on a small circuit board inside the cylindrical housing along with the flame detection component.

3,703,357
PROCESS FOR THE PREPARATION OF RUTILE TITANIUM DIOXIDE NEEDLES

Joseph P. Suris, Walnut Creek, David L. Bauer, Concord, and Ben F. West, Antioch, Calif., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Continuation-in-part of application Ser. No. 847,459, Aug. 4, 1969. This application July 28, 1971, Ser. No. 166,999
Int. Cl. C01g *23/04*
U.S. Cl. 423—611 **9 Claims**

Disclosed is a process which involves treating a titanium dioxide composition comprising monocrystalline rutile needles having axial ratios of greater than 20 and diameters of from 0.01 to 0.20 micron in admixture with nonrutile titanium dioxide particles with a solution of hydrochloric, nitric or perchloric acid at a temperature of greater than 200° C. The process provides as a product monocrystalline rutile titanium dioxide needles having axial ratios of greater than 20 and diameters within the range of from 0.04 to about 0.3 micron. The product of the present process is an excellent opacifier for disperse systems and is superior to known titanium dioxide products as a reinforcement material for certain plastics and metals.

3,703,358
METHOD OF GENERATING HYDROGEN WITH MAGNESIUM REACTANT

William N. Carson, Jr., Schenectady, and James L. Manganaro, New York, N.Y., assignors to General Electric Company
Original application Oct. 10, 1967, Ser. No. 674,159. Divided and this application Aug. 21, 1969, Ser. No. 852,017
Int. Cl. H01m *29/04;* **C01b** *1/03*
U.S. Cl. 423—657 **1 Claim**

A method of generating hydrogen is described which has a magnesium reactant and an aqueous electrolyte with a dewatering agent. A method is also described for generating hydrogen. The dewatering agent reduces substantially the volume of magnesium hydroxide precipitation within the cell during its operation by freeing water from the precipitate thereby increasing its density.

3,703,359
POLYMERIC AMINO ALUMINUM BOROHYDRIDE AND METHOD OF PREPARING

Stelvio Papetti, Hamden, Conn., assignor to Olin Mathieson Chemical Corporation
No Drawing. Filed Jan. 31, 1961, Ser. No. 86,232
Int. Cl. C01b *35/00*
U.S. Cl. 423—284 **9 Claims**

Polymeric amino aluminum borohydride,

$$(BH_4)_2AlNH_2$$

is provided by reacting R_3Al, where R is an alkyl group having from 1 to 5 carbon atoms, successively with ammonia and diborane.

3,703,360
GASOLINE ADDITIVE AND COMPOSITION

Warren L. Perilstein, Orchard Lake, Mich., assignor to Ethyl Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 856,147, Sept. 8, 1969. This application Aug. 21, 1970, Ser. No. 66,124
Int. Cl. C10l *1/22*
U.S. Cl. 44—63 **61 Claims**

Gasoline containing (1) a salt of an organophosphoric acid and an organic amine, and (2) an olefin hydrocarbon having an average molecular weight of from about 350 to about 1500; and an additive concentrate which is a combination of (1) and (2). The gasoline composition prevents and reduces excessive deposit build-up in internal combustion engines particularly on the underhead portion of the intake valves. The composition also is an effective carburetor detergent.

3,703,361
DECAHYDROACENAPHTHENE AS A HIGH ENERGY FUEL

Milton S. Konecky, South Plainfield, N.J., assignor to Esso Research and Engineering Company
No Drawing. Continuation-in-part of application Ser. No. 65,887, Oct. 31, 1960, now Patent No. 3,450,781. This application Oct. 23, 1968, Ser. No. 770,119
Int. Cl. C10l *1/08*
U.S. Cl. 44—80 **12 Claims**

Decahydroacenaphthene is both an excellent high energy fuel and coolant in rockets, or in standard jet-engines.

3,703,362
PRESENSITIZED LIGHT-SENSITIVE LETTERPRESS PRINTING MAKEREADY

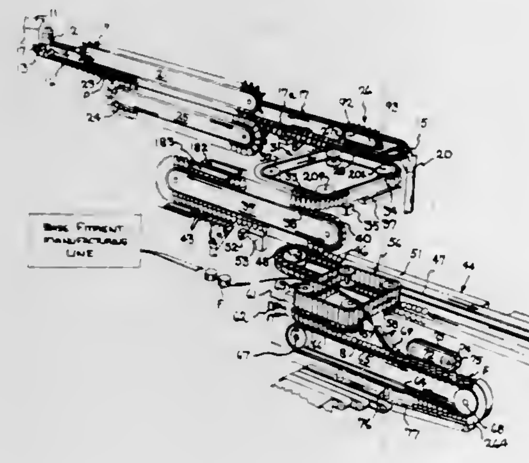
Daniel S. Dustin, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jan. 17, 1972, Ser. No. 218,238
Int. Cl. G03c *5/00, 11/00*
U.S. Cl. 96—38.2 **8 Claims**

Novel presensitized light-sensitive makeready sheet material for letterpress printing is provided. This sheet material is comprised of a flexible backing overlaid in ascending order with a thermoexpansible layer, a light-sensitive diazo resin layer, and an outer layer of a pigmented, water-insoluble, solvent-softenable polymeric compound.

3,703,363
METHOD AND APPARATUS FOR MAKING GLASS CONTAINERS

Richard A. Heaton, Toledo, and James D. Mallory, Maumee, Ohio, assignors to Owens-Illinois, Inc.
Filed Apr. 1, 1970, Ser. No. 24,721
Int. Cl. C03b *9/10, 9/12*
U.S. Cl. 65—67 **39 Claims**

The invention pertains to a manufacturing system for producing multi-part containers in which one part of glass is assembled with a plastic part to form a final composite container. The glass part is manufactured from a continuous ribbon of molten material drawn from a glass furnace and the glass in the ribbon is formed at equally spaced longitudinal distances therealong and maintained with conveyors moving at a constant velocity throughout the process during which successive finishing operations are performed on the glass container. After the glass is fed from the furnace, successive operations are performed while the glass progressively cools to: (a) form a continuous ribbon, (b) shape successive hollow containers from the ribbon, inspect and eject defective containers from the ribbon, (c) sever the containers from the ribbon and simultaneously prevent entry of foreign particles into them, (d) move the containers by a moving transfer conveyor to a burn-off machine and apply a surface treatment to the containers while in transit, (e) convey them through a linear burn-off device to simultaneously remove a waste moile portion from the outer end of the article and form the mouth, thereafter inspect and eject defective ones, (f) transfer the glass containers with a finished mouth or rim to a heat treating machine and successively heat and cool the necks and finishes of the containers, (g) transfer the heated containers to an assembly machine and, in transfer, inspect the containers, apply a surface treatment thereto, and reject defective containers, and (h) assemble and bond a plastic cup-like base element onto the bottom end of the containers to form a composite container.



The invention also includes apparatus combined with a glass ribbon machine. The apparatus includes a transfer machine that receives ware from the ribbon machine after crack-off; a burn-off machine of a unique, linear type, which receives ware from the transfer machine and by thermal means removes an outer end moile from the glassware and forms a bead type finish; a linear heat-treat machine that tempers the end portion of the ware near the newly formed bead finish; a transfer and inspection machine which removes ware from the heat-treat machine and rejects any defective ware; and a composite assembly machine that finishes the composite container by applying or uniting a plastic element onto the surface of the glassware near its bottom end. The machines are synchronized in phase and speed by a unique system.

3,703,364
PRODUCTION OF OIL-PRILLED FERTILIZER MATERIALS

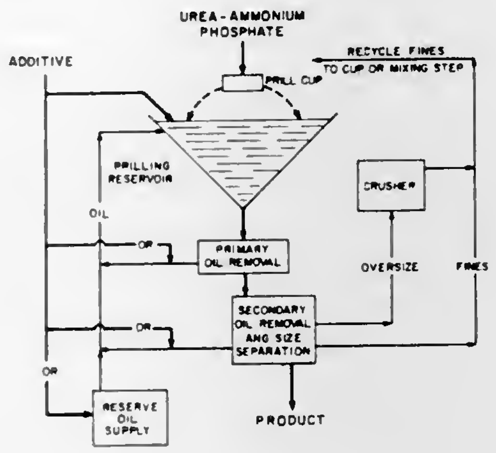
John E. Jordan, Sheffield, Ala., assignor to Tennessee Valley Authority

Continuation of application Ser. No. 67,878, Aug. 28, 1970. This application Apr. 8, 1971, Ser. No. 132,371

Int. Cl. C05b *19/02*

U.S. Cl. 71—29 **5 Claims**

Process for oil prilling urea and/or urea-ammonium phosphates. Improvements include increased oil removal from the products by (1) including small amounts of additives in the oil prilling bath, (2) selecting a prilling bath oil having a low viscosity and, (3) washing the oil-prilled products during the oil removal process. Methods result in products of enhanced value because of the lowered oil content. Additives include certain fatty acids. Washing media include methyl alcohol and phosphoric acid. Prilling bath oil is selected from naphthenic and/or isoparaffinic based hydrocarbons, for prevention of urea adduct formation in the production of liquid fertilizer.



METHODS OF INCORPORATING ADDITIVES IN OIL PRILLING PROCESS FOR PRODUCTION OF UREA-AMMONIUM PHOSPHATES

3,703,365
FRUIT ABSCISING METHOD

Shogo Takahashi, Takayasu Yamada, and Hiromi Okudaira, Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

No Drawing. Filed Feb. 13, 1970, Ser. No. 11,356

Claims priority, application Japan, Feb. 22, 1969, 44/13,496

Int. Cl. A01n *9/36*

U.S. Cl. 71—86 **3 Claims**

Fruit abscising composition for facilitating the harvest of fruit which comprises as an active ingredient a compound having the formula

$$(\mathrm{RO})_3\mathrm{P}=\mathrm{X} \qquad \text{(I)}$$

wherein R is hydrogen atom; an alkyl group having 1 to 4 carbon atoms, e.g. methyl, ethyl, propyl, butyl; a haloalkyl group having 1 to 4 carbon atoms in the alkyl moiety, e.g. 2-chloroethyl, 2-bromoethyl, 3-chloroethyl; an alkenyl group having 2 to 4 carbon atoms, e.g. vinyl, allyl; phenyl group or benzyl group provided that at least one of the R's is the above-defined group other than hydrogen atom; and X is oxygen atom or sulfur atom and the salt thereof, e.g. an alkali metal, alkaline earth metal, copper, zinc, ammonium or organic amine salt.

The method for facilitating the harvest of fruit by accelerated abscission layer formation which comprises applying to fruited trees, an effective amount to accelerate fruit abscission of said compound (I) or the salt thereof.

3,703,366
PROCESS FOR PRODUCING COPPER AND ELEMENTAL SULFUR

John T. Cullom, 628 6th Ave., San Manuel, Ariz. 85631

Filed Nov. 20, 1970, Ser. No. 91,298

Int. Cl. C01b *17/04;* **C22b** *13/06*

U.S. Cl. 75—74 **15 Claims**

An integrated process is disclosed for recovering copper and elemental sulfur from sulfidic copper ore, the effluent flue gases of the process being substantially free of sulfur dioxide and other sulfurous gases. In the process the sulfidic copper ore is ground autogenously to produce a finely divided flotation feed material that is subjected to froth flotation to obtain a copper ore concentrate and siliceous flotation tailings. The copper ore concentrate is mixed and nodulized with a carbonaceous fuel and a flux to produce autogenous smelting nodules. The nodules are smelted autogenously and the resulting molten matte and slag are converted to molten blister copper and converter slag by blowing the heated nodules, matte and slag with an oxidizing gas in a converter. The blister copper is recovered as one product of the process, and the converter slag is cast in the form of grinding boulders which are utilized as the grinding medium in the autogenous grinding step of the process. The sensible heat of the hot converter gas is utilized to supply the thermal energy requirements of a catalytic reformer in which steam and methane are reacted to produce hydrogen and carbon oxides. The resulting hydrogen is reacted with the sulfur dioxide content of the converter gas to produce hydrogen sulfide gas, and this hydrogen sulfide is reacted with a further quantity of sulfur dioxide to produce elemental sulfur which is recovered as the second product of the process. The converter gas is substantially depleted in its sulfur dioxide content and may safely be discharged into the atmosphere.

3,703,367
COPPER-ZINC ALLOYS

Franklin H. Cocks, Waltham, Mass., assignor to Tyco Laboratories, Inc., Waltham, Mass.

No Drawing. Filed Dec. 4, 1970, Ser. No. 95,347

Int. Cl. C22c *9/04, 9/06*

U.S. Cl. 75—157.5 **6 Claims**

Improved copper-zinc alloys containing titanium together with aluminum or nickel or both. If the amounts of titanium, aluminum, and nickel are kept with certain limits, the alloys are age-hardenable and a method is provided for heat treating such alloys to achieve a significant increase in hardness and strength properties. By increasing the amounts of titanium, aluminum, and nickel, it is possible to achieve alloys that are extremely hard after solution heat treating or casting.

3,703,368
METHOD FOR MAKING CASTABLE CARBONITRIDE ALLOYS

Erwin Rudy, Beaverton, Oreg., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

No Drawing. Filed Nov. 3, 1970, Ser. No. 89,222

Int. Cl. C22c *15/00*

U.S. Cl. 75—175.5 **19 Claims**

A method for fabricating improved cast refractory tooling materials is disclosed which comprises preparing a melt of titanium-tungsten-carbon-base alloy compositions $(\mathrm{Ti}_x\mathrm{W}_{1-x})\mathrm{C}_z$, or titanium-tungsten-nitrogen-carbon base alloy compositions $(\mathrm{Ti}_x\mathrm{W}_{1-x})(\mathrm{N}_y\mathrm{C}_{1-y})_z$ under a nitrogen-containing atmosphere, in which the mole fraction x is variable between the limits 0.25 and 0.70, the mole fraction y is less than 0.50, the stoichiometry parameter z, which measures the combined gramatoms of nitrogen and carbon present per gramatom metal in the alloy, is variable between 0.25 and 0.45, and rapidly cooling the melt to form a carbonitride-metal alloy composite having a fine-grained microstructure consisting of a refractory, hard carbonitride phase and a metal phase, with the metal phase being rich in tungsten and contributing toughness to the composite and the carbonitride phase having titanium as its base metal.

3,703,369
CHROMIUM-CONTAINING BODIES OF IMPROVED RESISTANCE TO OXIDATION AND NITRIFICATION

Alan U. Seybolt, Ballston Spa, N.Y., assignor to General Electric Company

Application Jan. 17, 1967, Ser. No. 609,931, which is a continuation-in-part of application Ser. No. 524,439, Feb. 2, 1966. Divided and this application Dec. 5, 1969, Ser. No. 882,726

Int. Cl. B22f *1/00*

U.S. Cl. 75—206 **3 Claims**

Chromium-containing alloy sintered bodies having improved resistance to oxidation and nitrification are produced by a process which includes the step of heating the bodies to an elevated temperature in the presence of free oxygen and thereby forming a $\mathrm{Cr_2O_3}$ scale on the bodies and a chromium ion migration-blocking layer of $\mathrm{YCrO_3}$ at the interface of the $\mathrm{Cr_2O_3}$ scale and the metal bodies.

ERRATUM

For Class 96—38.2 see:
Patent No. 3,703,362

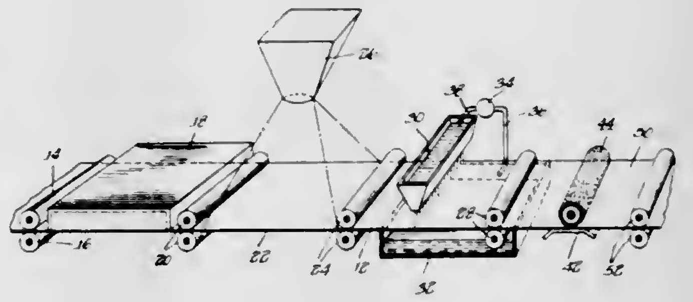
3,703,370
PRODUCTION OF BLACK AND WHITE PRINTS FROM COLOR TRANSPARENCIES BY ELECTROSTATIC PROCESS

Meyer L. Sugarman, Northbrook, and Thomas A. Wilkie, Evanston, Ill., assignors to Opto/Graphics, Inc., Kenilworth, Ill.

Filed July 22, 1969, Ser. No. 843,468

Int. Cl. G03g *13/00, 9/04*

U.S. Cl. 96—1 LY **1 Claim**



Dyes are blended with a zinc oxide and resin mix before application to a paper or other printing base for electrostatic printing. The dyes are selected to render the paper essentially panchromatic, whereby direct black and white prints are made at low cost from a color transparency.

3,703,371
PHOTOCONDUCTIVE ELEMENTS CONTAINING POLYMERIC BINDERS

Stewart H. Merrill, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation of application Ser. No. 772,370, Oct. 16, 1968. This application Sept. 30, 1971, Ser. No. 185,397

Int. Cl. G03g *5/06, 5/08*

U.S. Cl. 96—1.6 **16 Claims**

Photoconductive elements containing a photoconductor and a binder for the photoconductor comprising a poly-(alkylidenebisaryloxyalkyl-co-alkylene isophthalate) are described. The described elements can be sensitized and charged either negatively or positively and used to prepare images electrophotographically.

3,703,372
PHOTOCONDUCTIVE ELEMENTS CONTAINING POLYMERIC BINDERS

Stewart H. Merrill, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Continuation of abandoned application Ser. No. 779,201, Nov. 26, 1968. This application Nov. 4, 1971, Ser. No. 195,853
Int. Cl. G03g *5/06, 5/08*
U.S. Cl. 96—1.6 **12 Claims**

Photoconductive elements containing a photoconductor and binder for the photoconductor comprising a certain class of polyesters having aryleneoxy repeating units are described. The described elements can be sensitized and charged either negatively or positively and used to prepare images electrophotographically.

3,703,373
PROCESSES AND ELEMENTS FOR PREPARATION OF PHOTOMECHANICAL IMAGES

Michael John Alsup and Alfredo Ruben Guevara, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed June 15, 1970, Ser. No. 46,525
Int. Cl. G03c *11/12*
U.S. Cl. 96—28 **21 Claims**

A dry process for the preparation of photomechanical images is described which employs as the photosensitive material a plasticized light sensitive polymer.

3,703,374
METHOD OF MANUFACTURING COLOR PICTURE TUBE

Tadao Okabe, Hachioji, Mitsuru Oikawa, Tokyo, Makoto Tanaka, Musashino, and Waichi Nagashiro, Kokubunji, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 6, 1970, Ser. No. 78,372
Claims priority, application Japan, Nov. 9, 1969, 44/80,793; May 25, 1970, 45/44,040, 45/44,041
Int. Cl. G03c *5/00*
U.S. Cl. 96—36.1 **14 Claims**

A method of manufacturing color picture tubes utilizing the phenomenon wherein, during hardening of a liquid consisting of a dispersant with fine particles of e.g. carbon mixed therein, the fine particles are forced out of the hardened phase into the unhardened liquid phase to concentrate the latter. In this way a hardened layer of the fine particles is formed in the peripheral portion of each beam-permeating aperture of a shadow mask thereby to temporarily make smaller said shadow mask beam-permeating aperture. This shadow mask is used to provide a phosphor screen formed by phosphors of the three primary colors. Thereafter, the shadow mask has said hardened layer in each beam-permeating aperture removed, and is assembled into the tube.

3,703,375
PHOTOGRAPHIC PROCESSES AND MATERIALS

Nicholas H. Groet and Wilho M. Salminen, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Continuation of applications Ser. No. 717,912, Apr. 1, 1968, Ser. No. 717,921, Apr. 1, 1968, and Ser. No. 717,925, Apr. 1, 1968, all now abandoned. This application Nov. 3, 1970, Ser. No. 86,609
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 **34 Claims**

Photographic silver halide emulsions have incorporated therein a first colorless, non-diffusible photographic second coupler, upon reaction with oxidized color developer, forms a non-diffusible dye image; a second colored, non-diffusible photographic coupler having an azo chromophoric group in its coupling position, which second coupler, upon reaction with oxidized color develpoing agent, forms dye and releases the azo group; and, a third colorless, non-diffusible photographic coupler having a monothio group in its coupling position, which third coupler, upon reaction with oxidized color developer, forms a dye and a diffusible mercaptan development inhibitor.

The emulsions may have incorporated therein finely divided liquid particles of water insoluble coupler solvent, which particles contain the indicated combination of couplers. The emulsions may be prepared by dispersing the colorless, colored and DIR couplers in photographic coupler solvent, and dispersing the solution of coupler solvent into the emulsion.

3,703,376
INDUCTION IMAGING SYSTEM

Robert W. Gundlach, Victor, and Richard C. Vock, Ontario, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Continuation-in-part of abandoned application Ser. No. 697,084, Jan. 11, 1968. This application June 29, 1970, Ser. No. 50,763
Int. Cl. G03g *13/22, 15/22*
U.S. Cl. 96—1 R **30 Claims**

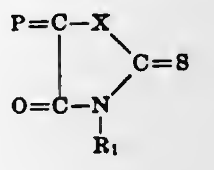
The invention relates to an induction imaging system suitable to accomplish development of an electrostatic latent image at a point remote from the photosensitive surface on which the latent image is originally formed. In one embodiment, an image support member bearing an electrostatic latent image is presented to a self-supporting film in the form of a continuous induction web, an image being thereby induced in the web, developed thereon and subsequently transferred to a receiver material. The continuous induction web may be charged with a negative, positive, ground or alternating potential while in contact with the image support member depending on the polarity of the electrostatic latent image on the image support member; or the continuous web may not be externally charged where only line copy reproduction is desired.

In another embodiment of the invention, an image support member carrying an electrostatic latent image is presented to a receiver material having a bulk resistivity in the range of from about 10^7 to 10^{14} ohm-cm. An electrostatic image is induced in the receiver material, developed thereon and fixed thereto or transferred to a secondary copy sheet material and fixed thereon.

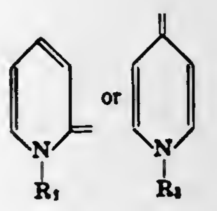
3,703,377
SUPERSENSITIZED LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC EMULSION

Kaiichiro Sakazume, Tokyo, Eiichi Sakamoto, Hanno, Shigemasa Itoh and Noboru Fujimori, Tokyo, and Shigeji Baba, Zam-machi, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed Dec. 23, 1970, Ser. No. 101,066
Claims priority, application Japan, Jan. 16, 1970, 45/3,820
Int. Cl. G03c *1/08*
U.S. Cl. 96—122 **5 Claims**

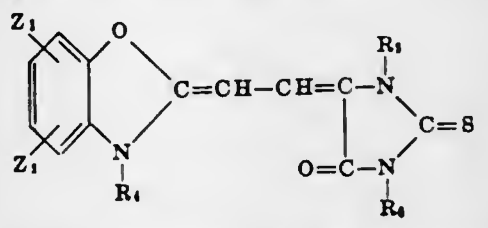
The emulsion contains at least one compound of the formula



wherein P is



R_2 and R_3 are individually an alkyl group; X is S, O, N, or N—R wherein R is hydrogen, an alkyl group or a lower alkyl group; and R_1 is an alkyl, allyl or aryl group, in combination with at least one compound of the formula



wherein R_4 is an alkyl group; R_5 and R_6 are individually an alkyl or aryl group; and Z_1 and Z_2 are individually a hydrogen or halogen atom or an alkyl, alkoxy or aryl group, said Z_1 and Z_2 may link to each other to form a benzene ring. The emulsion when subjected to supersensitization displays ideal color sensitivity.

ERRATUM

For Class 96—108 see:
Patent No. 3,703,584

3,703,378
SNACK FOOD AND METHOD OF PRODUCING SAME

Edward E. Bretch, Berwick, Pa., assignor to Borden, Inc., New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 676,716, Oct. 20, 1967. This application June 30, 1970, Ser. No. 51,369
Int. Cl. A23l *1/00, 1/10*
U.S. Cl. 99—81 **15 Claims**

Production of snack food products which expand upon baking or frying by heating a mix of a starch component and acylated high amylose starch as an expansion prevention agent to gelatinize the starch, cooling the mix to below gelatinization temperature and promptly thereafter shaping the mix into units of the shape desired.

3,703,379
DOUBLE EXPANDED FOOD PRODUCTS

Patricia D. Cummisford, Minneapolis, and Charles I. Beck, Wayzata, Minn., assignors to General Mills, Inc.
No Drawing. Filed July 27, 1970, Ser. No. 58,734
Int. Cl. A23l *1/10, 1/18*
U.S. Cl. 99—81 **8 Claims**

A method is disclosed for preparing a food product such as a snack, a confection or a toast-like food base. The food product is prepared by extrusion expanding a mixture including lipid and flour to provide a food piece having a plurality of large voids surrounded by thick walls. The food piece is then subjected to a secondary expansion such as by deep fat frying, microwave or salt puffing thereby puffing or expanding the walls.

3,703,380
BAKING PROCESS USING POLYOXYETHYLENE FATTY ETHERS AS SOFTENERS AND CONDITIONERS

Roy Kenneth Langhans, Newark, Del., assignor to ICI America Inc.
No Drawing. Filed Aug. 28, 1970, Ser. No. 67,971
Int. Cl. A21d *2/14*
U.S. Cl. 99—91 **6 Claims**

Yeast-raised baked goods such as bread are improved in softness and texture by the addition to the dough mix of polyoxyethylene fatty ethers having the general formula

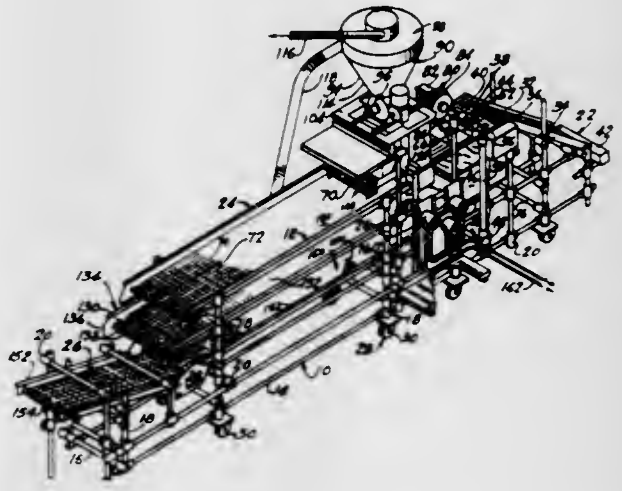
$$R—CH_2—O—CH_2CH_2—O(CH_2CH_2O)_xCH_2CH_2OH$$

wherein R is an acyclic hydrocarbon radical having 11 to 21 carbon atoms and x is an integer of 2 to 38.

3,703,381
WITHDRAWN

3,703,382
METHOD OF COATING EDIBLE FOOD ARTICLES

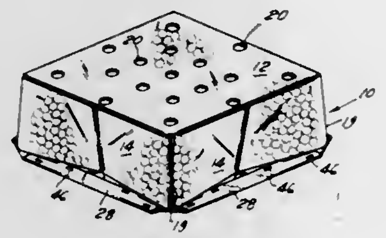
Charles N. Harkey, Gainesville, Ga., assignor to J. D. Jewell, Inc., Gainesville, Ga.
Filed Jan. 19, 1970, Ser. No. 3,911
Int. Cl. A23b *1/00*
U.S. Cl. 99—169 **12 Claims**



A method and a machine for continuously applying a combination wet batter and dry breader coating to continuously moving individual pieces of food such as cut-up chicken parts, shrimp, etc. The machine has a batter unit and a breader unit. A batter unit infeed conveyor receives the individual food pieces to be battered and breaded and conveys them continuously through a wet batter bath which coats the individual food pieces with batter. The individual pieces then travel on continuously under a blower to strip off excess batter and smooth the product surface before the continuously traveling product is automatically drop transferred to a breading machine unit top conveyor which receives the product from the batter unit conveyor by a drop-transfer on to a bed of dry breader material created by a breader unit gravity flow hopper and spreader to coat the bottom of the product with dry breader. Next, the continuously traveling product travels under a hopper sifter-type conveyor to coat the top of the product with dry breader. The breader unit has three conveyors comprising stainless steel wire mesh belts running in opposite direction to the preceding conveyor placed under each other. A top conveyor drop transfers to a second (middle) conveyor with proper height spacing to cause the product to turn over (change sides) during the transfer. The same is repeated from the second (middle) conveyor to a third (bottom) conveyor. From the bottom conveyor, the product is dropped and turned onto a stainless steel wire mesh belt carry-out conveyor. The product is carried out and transferred to a packout conveyor while the dry breader falls through the same conveyor and through the wire mesh belt into a continuously traveling sifter then into a hopper. The dry breader is then transferred through vacuum pipe from the receiving hopper at the bottom of the machine back to the starting hopper on the top of the machine which completes a dry breader cycle of the breader recirculating system.

3,703,383
FOOD PRODUCT PACKAGE

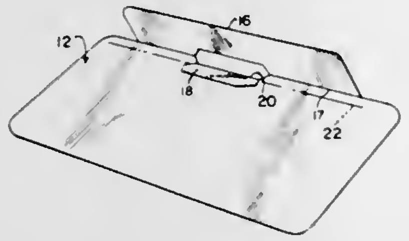
Morris William Kuchenbecker, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.
Filed May 17, 1971, Ser. No. 144,086
Int. Cl. B65d *5/00, 81/00*
U.S. Cl. 99—171 **7 Claims**



A shipping and display package, particularly for fresh fruit, which prevents bruising damage to the packaged product during handling and shipping by subjecting the product to constant, controlled, immobilizing pressure of the package side walls on the product. The pressure is achieved by forcing the medial portions of the side walls inward slightly after filling the package, the inward movement of the wall segments being achieved by the folding of closure flaps over side wall flanges having greater width in their medial portions than adjacent their ends.

3,703,384
EASILY OPENED BACON PACKAGE

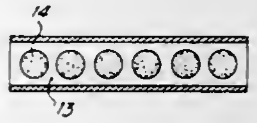
Oscar E. Seiferth and Glenn M. Austin, Madison, Wis., assignors to Oscar Mayer & Co., Inc., Madison, Wis.
Filed Mar. 1, 1971, Ser. No. 122,626
Int. Cl. B65b *25/06*
U.S. Cl. 99—174 **5 Claims**



Sliced bacon, placed on a fold-over bacon board, is hermetically enclosed within a peripheral seal between opposing sheets of packaging film. The fold-over board includes a lower support panel and a flap, joined to the panel along a fold line. The fold line is discontinuous at a recess die-cut from the fold line. The cut-out die-cut board material remains attached to the bacon board and is folded under the board flap to provide an inner restrictive barrier for preventing bacon from reaching the recess area. An easy opening tab is positioned between the opposing films outside the seal area but within the recess region to provide for a smooth, continuous edge of the package. The inner restrictive barrier prevents inadvertent placement of a grease "print" in the seal region due to contacting of bacon with the film in that region. Such a grease print would interfere with the formation of a hermetic seal on manufacture, or with reclosing the package after opening.

3,703,385
FIRE-RESISTANT PRODUCTS AND PROCESS OF MAKING THE SAME

Charles Emile Zwickert, 108 Bis Rue Jean Jaures, Noisy-le-Sec, France
Filed Dec. 23, 1969, Ser. No. 887,674
Claims priority, application France, Sept. 25, 1969, 6932783
Int. Cl. C09k *3/28*
U.S. Cl. 106—15 **2 Claims**



The invention relates to the fire resistance of solid products which are produced from fluid materials, namely liquid or pasty materials as well as solid materials in divided condition. In order to obtain a product having improved fire resistance properties, said fluid material is mixed with loose ashes. Particulate panels and plastic material are important examples of solid products to which the invention may be applied.

3,703,386
NONFLOW SOLDER-STOP GLASSES COMPRISING LEAD-ZINC BORATE AND CERAMIC

Raymond Louis Dietz, Toledo, Ohio, assignor to Owens-Illinois, Inc.
No Drawing. Filed Oct. 27, 1970, Ser. No. 84,530
Int. Cl. C04b *33/00;* **B23k** *31/02*
U.S. Cl. 106—39 R **5 Claims**

By the addition of the requisite amount of a powdered ceramic to a glass composition adapted for printing upon a selected portion of a conductor within a microelectronic component, the printed glass composition, when fired, is found to form an excellent solder stop (i.e. mask) in that its flow properties at its "firing temperature" are sufficiently retarded for good edge resolution despite multiple refirings that may occur during the formulation of the entire microelectronic component.

3,703,387
METHOD FOR PROCESSING RESISTOR GLASS SEAL COMPOSITIONS EMPLOYING ORGANIC LIQUID

Patrick N. Kesten and Richard A. Webb, Davison, and Raymond E. Bedford, Flint, Mich., assignors to General Motors Corporation, Detroit, Mich.
No Drawing. Filed Mar. 3, 1969, Ser. No. 804,010
Int. Cl. C04b *33/26*
U.S. Cl. 106—46 **5 Claims**

An improved method for wet mixing a glass seal resistor powder having free boric oxide in the glass phase wherein the exothermic reaction between the water and the boric oxide is minimized and controlled thereby precluding caking and balling of the resistor powder, this being achieved by the addition of an organic liquid solvent selected from the group consisting of toluene, pentane, trichloroethylene, methanol, and ethanol, in the amount of approximately 5–20% by weight of the resistor powder.

3,703,388
HIGH REFRACTIVE INDEX PHOTOCHROMIC GLASSES

Roger J. Araujo, Loris G. Sawchuk, and Thomas P. Seward III, Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.
No Drawing. Filed Aug. 19, 1970, Ser. No. 65,271
Int. Cl. C03c *3/14, 3/26*
U.S. Cl. 106—47 R **7 Claims**

This invention relates to a family of high refractive index photochromic glasses comprised of lanthanum-borates containing silver halides and exhibiting increased photochromic darkenability and efficient optical bleaching.

3,703,389
OPTICAL GLASS HAVING A HIGH REFRACTING INDEX AND A HIGH COLOR DISPERSION

Heinz Brömer, Hermannstein, and Norbert Meinert, Wetzlar, Germany, assignors to Ernst Lietz GmbH, Wetzlar, Germany
No Drawing. Filed Aug. 3, 1970, Ser. No. 60,630
Claims priority, application Germany, Aug. 14, 1969, P 19 41 374.2
Int. Cl. C03c *3/10, 3/30, 3/02*
U.S. Cl. 106—47 Q **4 Claims**

An optical glass of which the refractive index ranges between $n_e=1.77$ and $n_e=1.83$, and of which the Abbé number ranges between $V_e=26$ and $V_e=23$. The glass consists essentially of a glass former of silicon dioxide and germanium dioxide and in addition thereto a relatively high percentage of titanium dioxide is added. Other ingredients present are the oxides of sodium and potassium as well as the oxides of boron and lead. In spite of the high percentage of titanium dioxide the glass is only faintly colored.

3,703,390
CAPACITOR ENCAPSULANT AND METHOD OF FORMING

Roland T. Girard, Scotia, and George A. Rice, Schenectady, N.Y., assignors to General Electric Company
No Drawing. Continuation of abandoned application Ser. No. 811,589, Mar. 28, 1969. This application Apr. 21, 1971, Ser. No. 136,265
Int. Cl. C03c *3/08, 3/04, 5/00*
U.S. Cl. 106—54 **2 Claims**

A glass encapsulant for thick film capacitors capable of withstanding crazing when thermally cycled between 240° C. and −60° C. is composed of at least 45% by weight refractory metal oxides characterized by melting points above 1700° C. and between 1–4% by weight of high fluxing oxides of metals selected from the group consisting of sodium, potassium, lead and mixtures thereof. Preferably, the refractory metal oxides comprise a mixture of alumina, zirconia and silicon dioxide with alumina and zirconia cumulatively forming at least 25% by weight of the refractory metal oxides.

3,703,391
ELECTRIC MELTING FURNACE AND PROCESS OF USING IT

Thomas A. Clishem, Valley Station, Francis R. Duerr, Devondale, and Frederick D. Olympia, Jefferson County, Ky., assignors to Corhart Refractories Company, Louisville, Ky.
Filed July 29, 1970, Ser. No. 58,901
Int. Cl. C04b *35/48*
U.S. Cl. 106—57 **5 Claims**

Furnace has carbon electrodes suspended in a refractory-lined melting pot with a tap hole in the middle of a front wall portion thereof. A water-cooled copper lance sealably and removably engages the tap hole for injecting reactive gas into a molten charge in the pot. The lance has a tapered portion for sealably engaging the walls of the tap hole and has a stubby end as the only part thereof protruding inside of and facing into the pot. The stubby end has a plurality of jet orifices for discharging reactive gas, which orifices have axes disposed at an acute downward angle from the horizontal and in a divergent fan-like pattern in the direction of gas flow in the lance. Furnace is operated to produce molten oxidic refractory material by providing a shallow pool of that molten material in the pot, electrically melting further oxidic refractory material by means of the electrodes to enlarge the pool, engaging the water-cooled lance in the tap hole and causing reactive gas, e.g. oxygen, to flow from the lance into the pot, tilting the furnace forward to cause the pool surface to rise above the tap hole and to effect injection of gas into the pool with stirring thereof, then back-tilting the furnace after a predetermined time of lancing, discontinuing flow of the gas and removing the lance from the tap hole in preparation for fusion-casting the pool.

3,703,392
SHAPED ARTICLES OF IMPROVED DYEABILITY

Joseph Di Pietro, Alma, Mich., assignor to Celanese Corporation, New York, N.Y.
No Drawing. Original application June 30, 1965, Ser. No. 468,581. Divided and this application Sept. 8, 1970, Ser. No. 70,552
Int. Cl. C08b *21/04*
U.S. Cl. 106—177 **6 Claims**

A composition of improved dye receptivity comprising a polymer capable of being formed into shaped articles and a sulfonated aryl phosphate or an aryl phospate alkali metal sulfonate.

3,703,393
ASPHALTIC COMPOSITIONS

Russell E. Koons, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Continuation-in-part of application Ser. No. 711,188, Mar. 7, 1968, which is a continuation-in-part of application Ser. No. 321,360, Nov. 4, 1963. This application Sept. 2, 1970, Ser. No. 69,119
Int. Cl. C08h *13/00, 17/22;* **C08j** *1/46*
U.S. Cl. 106—279 **10 Claims**

The softening point and penetration of an air-blown asphalt is increased by mixing the air-blown asphalt with a liquid polyolefin oil having an average molecular weight of 500 to 2,000. The novel compositions can be utilized for various applications such as calking compounds.

ERRATUM

For Class 117—138.8 E see:
Patent No. 3,703,197

3,703,394
FORM BOARD COATED WITH A POROUS POLYMER FILM AND A FORM OIL, SAID FILM CHARACTERIZED BY HAVING SOLID PARTICLES DISTRIBUTED THERETHROUGH

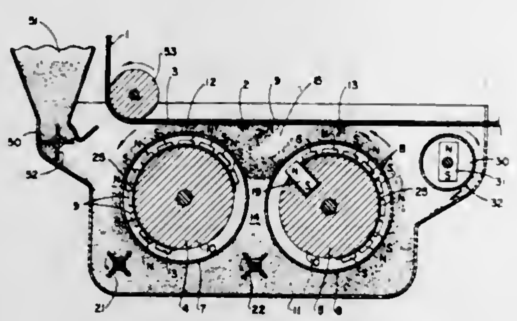
Charles B. Hemming, Brewster, N.Y., and Edward L. Bernholz, Danbury, Conn., assignors to Champion International Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 505,060, Oct. 24, 1965. This application Sept. 19, 1969, Ser. No. 861,546
Int. Cl. B44d *1/20;* **B29c** *1/04*
U.S. Cl. 117—5.1 **13 Claims**

The present invention is concerned with a reusable form board of any material, such as wood, plywood, hardboard, cement-asbestos or other fibrous board, and a porous polymer coating, with or without solid materials, preferably microspheres, used with an oil coating applied to the board either before or after the plastic coating, or as a blend of the plastic coating and oil.

3,703,395

METHOD FOR DEVELOPMENT OF ELECTROSTATIC IMAGES

Roger A. Drexler and Conrad Altmann, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Original application Feb. 29, 1968, Ser. No. 709,281, now Patent No. 3,543,720, dated Dec. 1, 1970. Divided and this application July 20, 1970, Ser. No. 63,961
Int. Cl. G03g *13/08, 15/08*
U.S. Cl. 117—17.5 1 Claim



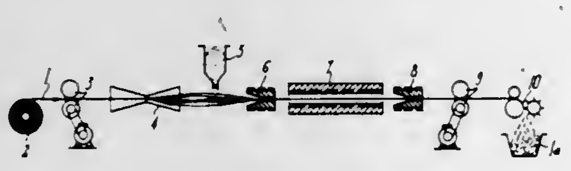
Developer is fed into a cavity faster than it is discharged creating a developer accumulation in the cavity forming a soft, agitated development medium. In preferred embodiments, two magnetic brushes are arranged to create the accumulation in the form of a gently tumbling rollback from the contacting of one of the brushes with the image-bearing surface. In the preferred embodiments, the accumulation is accentuated by adjusting the spacing between the brushes and the image-bearing surface, adjusting the peripheral speed of the brushes and controlling the direction of movement of the image-bearing surface relative to the movement of the brushes.

Carrier carryout is reduced by directing a strong magnetic flux at the rollback area and by providing an auxiliary carrier scavenging mechanism.

3,703,396

APPARATUS FOR MANUFACTURING PRODUCTS COMPOSED OF FIBERS AGGLOMERATED WITH SYNTHETIC RESINS

Jean Lamanche, La Ravoire, and Gerard Buisson, Chambery, France, assignors to Compagnie de Saint-Gobain, Neuilly-sur-Seine, Seine, France
Filed Feb. 2, 1970, Ser. No. 7,639
Claims priority, application France, Feb. 5, 1969, 6902522
Int. Cl. B44d *1/094;* **B32b** *5/16*
U.S. Cl. 117—21 4 Claims

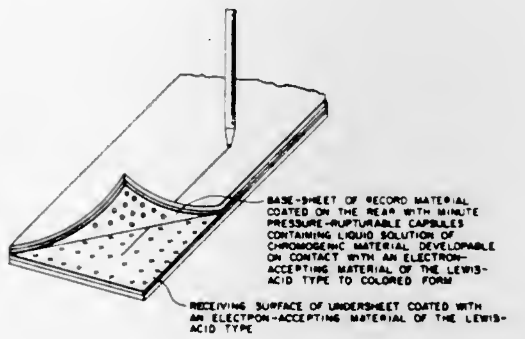


The production of running lengths of hardened compounds of fibers thoroughly impregnated with synthetic resin, which may be cut into small fragmentary pieces adapted to serve as a charge for molding plastic bodies with a fiber reenforcement. The strands of the fibers are reeled from a supply, and the individual fibers are separated from each other by air currents or electrostatic charges of the same polarity. Synthetic resin in powdered form is applied to the separated fibers to effect a thorough intermingling between them which is followed immediately by a preliminary heating of the composite product to effect a fusing of the resin with the fiber component. This fusing is followed by a more intense heating and shaping of the composite product into continuous reeds, which, after cooling and hardening may be cut up into small pieces of any desired size. A special feature of the invention resides in separating the fibers of the strands from one another by applying an electrostatic potential of the same polarity to the fibers to produce a repulsive force therebetween, and by applying an electrostatic potential of opposite polarity to the powdered particles of the resin, to induce an attractive force between these particles and the fibers, and the ultimate thorough fixation of these particles onto the fibers, in consequence of the heating and molding thereof by their passage through the openings in heated spinnerets or analogous heating and shaping devices.

3,703,397

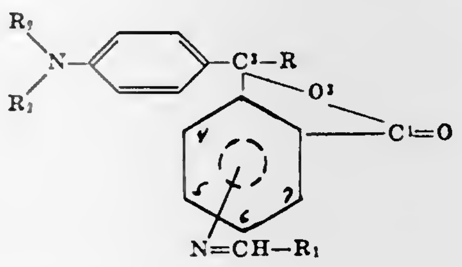
MARK-FORMING RECORD MATERIALS AND PROCESS FOR THEIR USE

Chao-Han Lin, Dayton, and Arthur J. Wright, Cincinnati, Ohio, assignors to The National Cash Register Company, Dayton, Ohio
Original application Jan. 21, 1969, Ser. No. 792,280, now Patent No. 3,594,369, dated July 20, 1971. Divided and this application Oct. 30, 1970, Ser. No. 85,754
Int. Cl. B61m *5/22*
U.S. Cl. 117—36.2 15 Claims



BASE-SHEET OF RECORD MATERIAL COATED ON THE REAR WITH MINUTE PRESSURE-RUPTURABLE CAPSULES CONTAINING LIQUID SOLUTION OF CHROMOGENIC MATERIAL DEVELOPABLE ON CONTACT WITH AN ELECTRON-ACCEPTING MATERIAL OF THE LEWIS-ACID TYPE TO COLORED FORM
RECEIVING SURFACE OF UNDERSHEET COATED WITH AN ELECTRON-ACCEPTING MATERIAL OF THE LEWIS-ACID TYPE

A novel chromogenic material of normally colorless form is disclosed, having a structural formula:



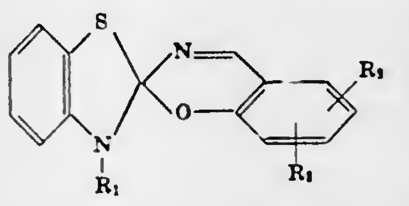
wherein R comprises 1,2-dimethylindol-3-yl and p-dialkylaminophenyl radicals; R_1 comprises substituted and unsubstituted aromatic and heterocyclic-aromatic radicals; and R_2 comprises hydrogen and alkyl radicals having less than five carbon atoms—said material assuming a colored form upon reactive contact with a Lewis acid molecule. Examples include 6-(p-dimethylaminobenzylidene)amino-3-(p-dimethylaminophenyl)-3-(1,2 - dimethylindol-3-yl)phthalide; 5 - (p-dimethylaminobenzylidene) amino-3-(p-dimethylaminophenyl)-3-(1,2 - dimethylindol-3-yl)phthalide; 6-(benzylidene)amino-3,3-bis(p-dimethylaminophenyl)phthalide; 5-(p-dimethylaminobenzylidene) amino-3,3-bis(p-dimethylaminophenyl)phthalide; 6-(cinnamylidene)amino-3-(p-dimethylaminophenyl - 3 - (1,2-dimethylindol-3-yl)phthalide.

3,703,398

PRESSURE SENSITIVE COPYING PAPER

Hisatake Ono and Chiaki Osada, Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
No Drawing. Filed Oct. 8, 1970, Ser. No. 79,336
Claims priority, application Japan, Oct. 8, 1969, 44/80,537
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.2 6 Claims

Pressure-sensitive copying paper and process for preparing same comprising a support having coated thereon a layer of a color-forming compound having the formula

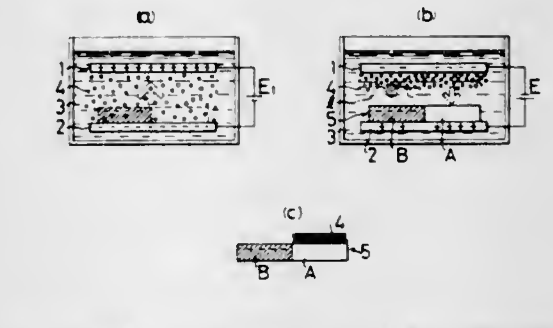


wherein R_1 is an alkyl group having 1 to 4 carbon atoms, R_2 and R_3 each is a member selected from the group consisting of a hydrogen atom, a halogen atom, a nitro group, an alkoxyl group of from 1 to 4 carbon atoms, an alkoxycarbonyl group of from 1 to 4 carbon atoms, and an aldehyde group, said compound reactive with an electron acceptive substance to produce a distinct color. The present invention also extends to the color-forming compounds employed and their process of preparation.

3,703,399

METHOD OF LIQUID REVERSAL DEVELOPMENT FOR ELECTROGRAPHY

Susumu Tanaka and Ken-Ichi Wada, Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Minami-ku, Japan
Filed Oct. 14, 1970, Ser. No. 80,614
Claims priority, application Japan, Oct. 29, 1969, 44/86,577
Int. Cl. G03g *13/10, 15/10*
U.S. Cl. 117—37 LE 5 Claims



A bias voltage having an opposite polarity relative to toner is first applied to a developer liquid to thereby cause the toner to move toward a development electrode, and a bias voltage having the same polarity as the toner is then applied to the developer liquid. This method insures improved reproductivity of contrast and halftone of images on electrographic paper.

3,703,400

DEVELOPING METHOD FOR ELECTROPHOTOGRAPHY

Yasuo Tamai, Masamichi Sato, Seiji Matsumoto, and Satoru Honjo, Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
No Drawing. Filed Apr. 7, 1970, Ser. No. 26,442
Claims priority, application Japan, Apr. 7, 1969, 44/26,263
Int. Cl. B41c *1/06;* **G03g** *9/04*
U.S. Cl. 117—37 LE 1 Claim

A developing method for electrophotography comprising the steps of developing an electrostatic latent image on a photoconductive insulating layer with a liquid developing agent containing therein fine particles having a positive electrical charge and subsequently cleaning said insulative layer carrying the image thereon, the improvement which comprises said liquid developing agent being comprised of a carrier liquid, fine particles having a positive electric charge contained in said carrier liquid in the dispersed state, and a resin contained in said carrier liquid in the dissolved state

(I) said carrier liquid having an electric resistance exceeding 10^{11} Ω cm. and being insoluble in ethyl cellulose,

(II) said fine particles which are contained in the dispersed state being composed of (a) pigment particles insoluble in the carrier liquid and (b) ethyl cellulose particles, and

(III) at least a part of the resin which is contained in the dissolved state in the said liquid being insoluble in a cleaning liquid used in said cleaning.

3,703,401

METHOD FOR PREPARING THE VIEWING-SCREEN STRUCTURE OF A CATHODE-RAY TUBE

Samuel Broughton Deal, Lancaster, and Donald Walter Bartch, Columbia, Pa., assignors to RCA Corporation
No Drawing. Filed Dec. 28, 1970, Ser. No. 102,148
Int. Cl. H01j *3/06;* **B44d** *5/00*
U.S. Cl. 117—33.5 CP 9 Claims

Method comprises (a) preheating to about 50 to 75° C. a viewing-screen support, a viewing screen thereon and a light-reflective metal layer on the screen, (b) depositing on the preheated metal layer a coating of an organic, volatilizable film-forming material from an aqueous dispersion thereof, and (c) depositing on the coated preheated metal layer an overcoating of carbon particles from a binder-free suspension of carbon particles in a liquid. Then, the support and structures thereon are baked in air at about 400 to 450° C. to remove organic and volatile matter.

3,703,402

ELECTRON SENSITIVE COMPOSITIONS

Herbert S. Cole, Jr., Scotia, N.Y., assignor to General Electric Company
No Drawing. Filed Nov. 23, 1970, Ser. No. 92,307
Int. Cl. C01j *1/10;* **B44d** *1/50*
U.S. Cl. 117—37 R 10 Claims

Certain unsaturated partial esters of maleic anhydride copolymers with certain mono-vinylidene compounds are insensitive to actinic light but extremely sensitive to electrons. Thin coatings of these compositions are insolubilized with a radiation dose no greater than 5×10^{-7} coul./cm.^{2}, which is a marked improvement over the materials now used as the electron-sensitive resist for making high resolution photomasks, microcircuits, etc.

3,703,403

METHOD FOR MANUFACTURING SHEET MATERIAL EXHIBITING A HIGHLY GLOSSY SURFACE

Shigekazu Ohnishi, Masaharu Nishishita, and Hisateru Takimoto, Okayama, Japan, assignors to Kuraray Co., Ltd., Kurashiki City, Japan
No Drawing. Filed Sept. 14, 1970, Ser. No. 72,142
Claims priority, application Japan, Sept. 29, 1969, 44/77,555
Int. Cl. B44d *1/44*
U.S. Cl. 117—64 C 13 Claims

A method is provided for producing sheet material exhibiting a high glossy surface comprising applying a layer of a polymer solution to a highly smooth-surfaced substrate, superimposing a porous sheet onto said layer of polymer solution, removing solvent from said layer of polymer solution through the porous sheet, thereby solidifying the polymer solution to form a non-porous polymeric layer to which said porous sheet is bonded, heat-setting the non-porous polymeric layer by heating said layer at a temperature ranging from about 10° C. to 50° C. below the melting point of the polymer, cooling the non-porous polymeric layer; and then stripping the non-porous polymeric layer to which the porous sheet is bonded from said smooth-surfaced substrate to recover a sheet material exhibiting a highly glossy surface.

3,703,404

COATED SEEDS AND PROCESS FOR COATING SEEDS

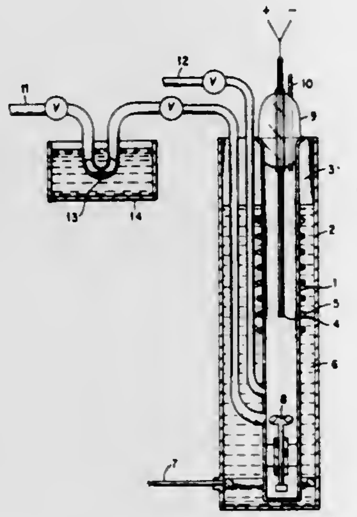
William W. Kirk, Salinas, Calif., assignor to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Filed Oct. 30, 1970, Ser. No. 85,757
Int. Cl. A01c *1/06*
U.S. Cl. 117—72 **41 Claims**

A new process for coating seeds for planting is described. Seeds are initially coated with finely-ground, porous particles, e.g., heat expanded vermiculite, dampening them only enough to cause the vermiculite particles to adhere to the natural seed coat and to each other. When the seed is completely coated an overcoat is applied. The overcoat comprises finely-ground porous particles applied with a bonding agent comprising about equal parts polyvinyl acetate and polyvinyl alcohol with enough water to make the agent sprayable. Small seeds so coated germinate substantially as quickly as uncoated seeds and total germination is comparable. Small seeded vegetable crops can be planted to a stand with available precision planters.

3,703,405

VAPOR DEPOSITION OF RHENIUM AND RHENIUM-TUNGSTEN ALLOY COATINGS

Abner Brenner, Chevy Chase, Md., and Harvey J. Anderson, Washington, D.C., assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed Oct. 27, 1970, Ser. No. 84,292
Int. Cl. C23c *11/00, 13/00;* **B23p** *3/00*
U.S. Cl. 117—107.2 **1 Claim**



A process for coating a substrate with rhenium. A mixture of gaseous hydrogen and a rhenium oxychloride vaporized in an inert gas is passed over the substrate, which is heated to a temperature effecting reduction of the oxychloride and deposition of rhenium metal on the substrate. A rhenium-tungsten alloy coating can be deposited by incorporating tungsten hexafluoride in the gas mixture passed over the substrate.

3,703,406

PROCESS FOR MANUFACTURING A DURABLE OILY STAIN RESISTANT POLYESTER FIBER, AND ITS PRODUCT

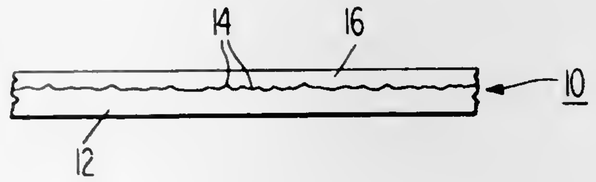
Ichiro Sakurada, Kyoto, Toshio Okada, Kadoma, and Motoaki Uragami, Osaka, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan
No Drawing. Filed Sept. 10, 1970, Ser. No. 71,200
Claims priority, application Japan, Sept. 10, 1969, 44/71,257
Int. Cl. B44d *5/12*
U.S. Cl. 117—118 **3 Claims**

A polyester fiber onto which a lower-hydroxyalkyl methacrylate was graft-polymerized shows excellent resistance to oil staining. The number of carbon atoms of said hydroxyalkyl group is from one to four and 2-hydroxyethyl methacrylate is preferably employed.

3,703,407

RELIEF PHASE HOLOGRAMS

William James Hannan and John Patrick Russell, Pennington, and Arthur Herbert Firester, Skillman, N.J., assignors to RCA Corporation
Filed Dec. 15, 1970, Ser. No. 98,302
Int. Cl. G02b *27/22;* **G03c** *5/22*
U.S. Cl. 117—138.8 UA **4 Claims**



An improved relief phase hologram is described which minimizes signal distortion upon playback. The hologram comprises a holographic relief pattern embossed on a polymeric substrate such as a vinyl tape and a coating on the surface of the substrate directly over the relief pattern. The coating must have a thickness of somewhat greater than the maximum contour depth of the relief pattern and must be of a material having an index of refraction which is different from that of the substrate.

3,703,408

PHOTOSENSITIVE SEMICONDUCTOR DEVICE

Melvin Belasco, Dallas, and Sebastian R. Borrello, Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Original application July 5, 1967, Ser. No. 652,653. Divided and this application May 21, 1969, Ser. No. 871,116
Int. Cl. B44l *1/18*
U.S. Cl. 117—212 **13 Claims**

A metal-semiconductor-metal phototransistor formed by a pair of closely spaced, thin metal films in rectifying contact with the surface of a lightly doped p-type indium arsenide substrate. The spacing between the metal films is substantially less than the diffusion length of minority carrier in the indium arsenide at the operating temperature, which is on the order of −78° C. One metal film may be considered the collector region, the semiconductor material the base region, and the other metal film the emitter region. When the transistor is biased like an NPN transistor, the collector current is varied in proportion to the radiation striking the base region generally in the same manner as a photodiode, but the current modulation is many times that produced by a photodiode for a given radiation level.

3,703,409

AMINOBENZOIC ACID SULFATES AS INTUMESCENT AGENTS

Shirley H. Roth, Highland Park, N.J., assignor to Cities Service Company, New York, N.Y.
No Drawing. Filed Dec. 28, 1970, Ser. No. 102,241
Int. Cl. C09d *5/18;* **C09k** *3/28*
U.S. Cl. 117—136 **2 Claims**

Aminobenzoic acid sulfates, such as 2-amino-5-chloro benzoic acid sulfate, are used as intumescent agents dispersed in a binder and coated on a substrate.

3,703,410

5-AMINO-2-NITROBENZOIC ACID AS AN INTUMESCENT AGENT

Shirley H. Roth, Highland Park, N.J., assignor to Cities Service Company, New York, N.Y.
No Drawing. Filed Dec. 28, 1970, Ser. No. 102,242
Int. Cl. C09d *5/18;* **C09k** *3/28*
U.S. Cl. 117—136 **3 Claims**

5-amino-2-nitrobenzoic acid is useful as an intumescent agent with a binder.

3,703,411

METHOD OF MAKING A MAGNETIC RECORDING MEDIUM

Cevdet Melezoglu, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
No Drawing. Filed Apr. 22, 1968, Ser. No. 723,319
Int. Cl. H01f *10/02, 10/04*
U.S. Cl. 117—237 **2 Claims**

A method of making a magnetic recording medium or media comprising the steps of providing a substrate or support member of a vitreous material such as a glass or glass-ceramic in the form of a tape, disk or cylinder, heating such support member, spraying a surface of the heated member with a solution of ferric chloride to form thereon a coating or film of ferric oxide having magnetic properties. If only alpha ferric oxide is formed on said surface the support member may be subjected to a reducing atmosphere at elevated temperatures to change the coating to magnetite. It is preferable to thereafter subject said support member to an oxidizing atmosphere at elevated temperatures to change said coating to gamma ferric oxide.

ERRATUM

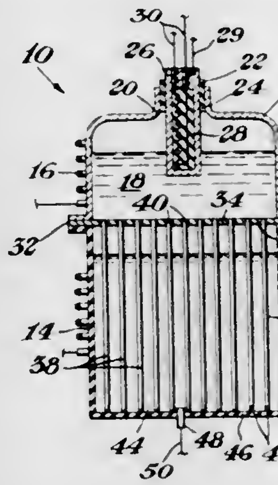
For Class 117—138.8 B see:
Patent No. 3,703,588

3,703,412

PROCESS FOR GENERATING ELECTRICAL ENERGY COMPRISING MELTING THE ANODE METAL IN THE RESERVOIR PRIOR TO MELTING THE ANODE METAL IN THE ELECTROLYTE FIBERS

Charles A. Levine, Concord, Calif., assignor to The Dow Chemical Company, Midland, Mich.
Filed Sept. 8, 1970, Ser. No. 70,145
Int. Cl. H01m *33/00*
U.S. Cl. 136—6 **2 Claims**

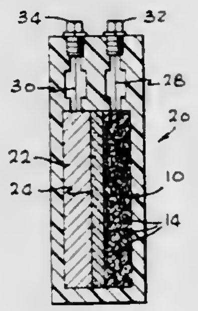
The disclosure relates to battery cells having a liquid reducible cathode and an oxidizable metal anode contained within a reservoir and a plurality of hollow electrolyte fibers. An improved cell is taught wherein heating means is positioned in thermal communication with the reservoir of oxidizable metal. Supporting means for the fibers is also described, which means increased battery life. Also disclosed is a process whereby the battery is activated by melting the oxidizable metal disposed in the reservoir before the metal in the fibers is melted.



3,703,413

FLEXIBLE INORGANIC FIBERS AND BATTERY ELECTRODE CONTAINING SAME

Frank C. Arrance, Costa Mesa, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.
Filed Dec. 11, 1969, Ser. No. 884,191
Int. Cl. H01m *35/00, 13/00*
U.S. Cl. 136—6 **23 Claims**



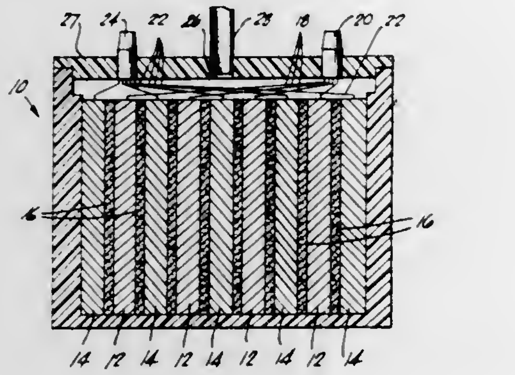
Method of producing strong inorganic fibers such as zinc oxide fibers, by forming a mixture of inorganic particles such as zinc oxide, with a plastic binder such as polyphenylene oxide (PPO), in a flash drying solvent for the binder, such as chloroform, forming a slurry, and fiberizing the mixture as by spraying into a closed chamber, to flash the solvent and form fibers of the inorganic material containing plastic binder, such as zinc oxide fibers containing polyphenylene oxide; such coated fibers can be sintered, e.g. at temperature of the order of about 1000° C., if desired, to remove the organic binder or residue, and form strong sintered fibers. The resulting inorganic fibers, either unsintered or sintered, are particularly adapted to be incorporated into battery electrodes, e.g. by compacting zinc oxide unsintered or sintered fibers into an electrode shape, to provide a high strength porous, stable electrode structure.

3,703,414

LOW-GASSING BATTERY SEPARATOR AND METHOD OF PRODUCTION

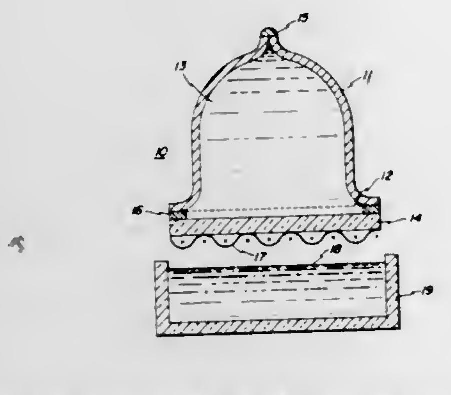
Joseph S. Smatko, Santa Barbara, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.
Filed Sept. 8, 1970, Ser. No. 70,400
Int. Cl. H01m *43/02*
U.S. Cl. 136—30 **26 Claims**

Production of inorganic porous sintered battery separator substantially reducing formation of gas when in contact with a zinc electrode, and permitting long cycle life of a high energy density battery such as a silver-zinc battery, produced according to a preferred embodiment by firing or sintering a compacted magnesium silicate-iron silicate composition, particularly the mineral olivine, at temperature ranging from about 1,000° C. to about 1,400° C. in a carbon monoxide-carbon dioxide atmosphere, to produce a porous sintered membrane consisting essentially of magnesium silicate and iron silicate, e.g., a sintered porous olivine separator, the iron content thereof being substantially entirely in ferrous form.



3,703,415
PRIMARY SODIUM-WATER BATTERY

Stephan P. Mitoff, Elnora, and Fritz G. Will, Scotia, N.Y., assignors to General Electric Company
Filed June 1, 1971, Ser. No. 148,791
Int. Cl. H01m *23/00*
U.S. Cl. 136—83 R **5 Claims**



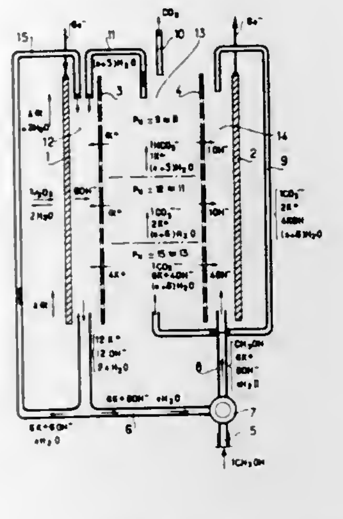
A primary sodium-water battery is disclosed which comprises a casing with an open surface, an anode positioned in the casing, an anode of sodium as an amalgam or sodium in a nonaqueous organic electrolyte, a solid sodium ion-conductive electrolyte sealed to the casing closing the open surface, and a metallic grid positioned adjacent the exterior surface of the solid electrolyte.

3,703,416
BASIC CELL OPERATING WITH HYDROCARBON FUEL

Jean Jacquelin, Lapoitevine, France, assignor to Compagnie Generale d'Electricite, Paris, France
Filed Sept. 29, 1970, Ser. No. 76,511
Claims priority, application France, Sept. 29, 1969, 6933153
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 R **3 Claims**

Basic cell with hydrocarbon fuel, in which a decarbonization of the electrolyte is carried out.

It comprises two diaphragms respectively anodic and cathodic which insulate a central compartment wherein there locally appears a pH value sufficiently low to give rise to a carbon dioxide emission.



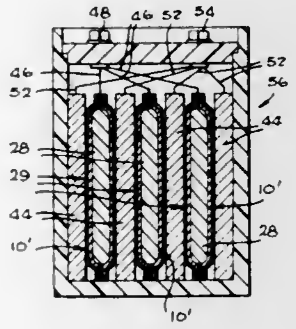
The invention may be used for fuel cells having a high overall energetic yield.

ERRATUM

For Class 136—134 R see:
Patent No. 3,703,589

3,703,417
HEAT SEALED FLEXIBLE ENVELOPE SEPARATOR AND BATTERY EMBODYING SAME

Albert G. Rosa, Placentia, and George W. Birrer, Westminster, Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.
Filed Sept. 11, 1969, Ser. No. 857,148
Int. Cl. H01m *3/00*
U.S. Cl. 136—145 **16 Claims**



Production of flexible envelope formed of flexible sheets heat sealed together along edge portions thereof, said flexible envelope having high resistance to alkali attack at elevated temperature over an extended period, the heat sealed bond being resistant to delamination of the bonded sheets and providing a strong bond, by heat sealing such flexible sheets, e.g. formed of a chrysotile asbestos (pure fuel cell grade), employing a sealant in the form preferably of a mixture of neoprene and polysulfone. The resulting flexible envelope can be coated with a flexible substantially inorganic film by dip-coating in a mixture preferably of a major portion of an inorganic or ceramic separator material, a minor portion of potassium titanate in short fiber form, and a minor portion of inorganic polymer, e.g. polyphenylene oxide, dissolved in a suitable solvent such as chloroform. The resulting porous chrysotile asbestos separator envelope heat sealed as described above and having a flexible coating thereon as

described above, can serve as an electrode compartment for a battery electrode, e.g. a zinc electrode inserted therein, and such separator-electrode unit incorporated in a battery in side-by-side relation with other electrodes, such as silver electrodes, the flexible electrode compartment being resistant to shorting by penetration of electrode material into the sealed edge portions of the separator envelope.

3,703,418
METHOD OF PREVENTING RUST ON STEEL SURFACE

Hiroshi Iijima, Masaji Terasawa, Yutaro Gotoh, and Osamu Tokita, all % Nippon Kokan Kabushiki Kaisha Technical Institute 2730, Kawasakishi, Japan
No Drawing. Continuation-in-part of application Ser. No. 683,028, Nov. 14, 1967. This application Dec. 31, 1970, Ser. No. 103,339
Claims priority, application Japan, Nov. 16, 1966, 41/74,959
Int. Cl. C23f *7/00*
U.S. Cl. 148—6.14 **3 Claims**

Metals are protected against rust formation thereon by immersing them in a molybdate solution.

3,703,419
SURFACE FINISHING

Donald F. Esler, Natrona Heights, and Edward G. Choby, Jr., Pittsburgh, Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.
No Drawing. Filed Sept. 1, 1970, Ser. No. 68,789
Int. Cl. C23f *7/00*
U.S. Cl. 148—6.16 **29 Claims**

A composition for providing a metallic surface with protection against marring, marking, and staining which comprises an aqueous solution having a molar concentration of phosphate, chromate, magnesium, and ammonium ions of from 0.01 to 1.00 mole per 100 ml. of water and a molar concentration of silicate ions of from 0.01 to 33% of the molar concentration of phosphate, chromate, magnesium, and ammonium ions. The phosphate, chromate, magnesium, and ammonium ions are proportionately present in the aqueous solution as 27–73 mole percent phosphate ion, 5–39 mole percent chromate ion, 0–23 mole percent magnesium ion, and 0.5–35 mole percent ammonium ion.

A method of providing a metallic surface with a coating for protecting the metallic surface against marring, marking, and staining which comprises the steps of coating the surface with the composition of this invention and curing the coating so as to render it substantially water insoluble.

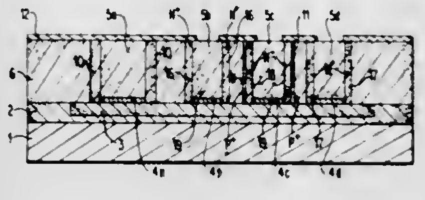
A composite article comprising a layer of metal and at least one layer of a substantially water insoluble, transparent, cured coating which offers protection from marring, marking, and staining. The coating is comprised of anionic polymeric chains of phosphorus, chromium, oxygen, and silicon atoms with or without magnesium cations.

3,703,420
LATERAL TRANSISTOR STRUCTURE AND PROCESS FOR FORMING THE SAME

Madhukar B. Vora, Beacon, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 3, 1970, Ser. No. 16,103
Int. Cl. H01l *7/36, 5/00;* **C23c** *13/00*
U.S. Cl. 148—175 **13 Claims**

A novel transistor wherein current travels laterally along the semi-conductor surface having polycrystalline diffusion paths in its surface which serve as the means of introducing impurities in a vertical orientation into surrounding single crystal material because of the more rapid diffusion rate of polycrystalline material. Appropriate collector/emitter and base contacts are made thereto.

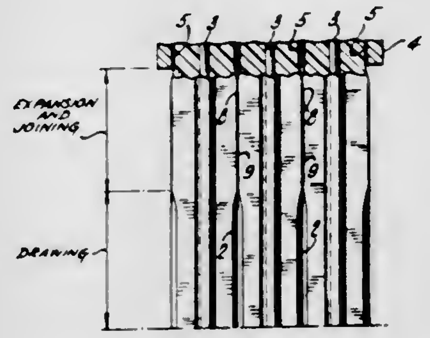
Process for forming such a lateral semi-conductor by diffusing through a polycrystalline diffusion path or channel, diffusion rapidly taking place in a lateral direction



through the polycrystalline silicon which is in an epitaxial layer. In an alternate embodiment, diffusion is through monocrystalline areas to an ultra highly doped substrate area.

3,703,421
PLASTIC COATED WIRES AND PREPARATION THEREOF

Richard W. Fisher, 6 Fairway Court, Scotch Plains, N.J.
Continuation-in-part of application Ser. No. 724,472, Apr. 26, 1968. This application Sept. 29, 1970, Ser. No. 76,580
Int. Cl. B29f *3/10*
U.S. Cl. 156—244 **5 Claims**



Plastic coated wires, useful as twist ties for fastening packages and parts and as bag closures are provided in multiple ribbons, each ribbon integral with its adjacent ribbons and detachably attached thereto. The ribbons are prepared by extruding a plurality of thermoplastic ribbons individually, allowing them to expand, join, and seal outside the extrusion die and drawing down the extrudate to the desired cross-sectional configuration.

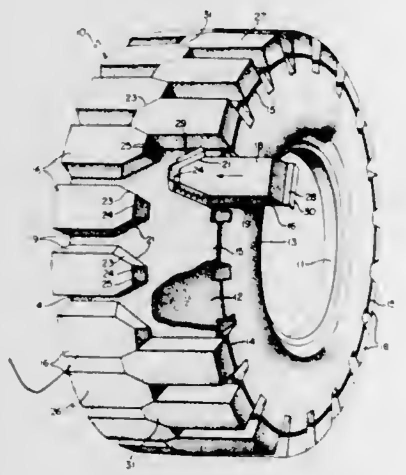
3,703,422
POLYAROMATIC RESIN FACED HONEYCOMB PANEL AND METHOD FOR MAKING SAME

Stanley Y. Yoshino, Monterey Park, Calif., assignor to North American Rockwell Corporation
Filed Jan. 2, 1970, Ser. No. 334
Int. Cl. B32b *31/02, 31/26*
U.S. Cl. 156—87 **10 Claims**

A honeycomb panel with non-flammable face sheets made of glass cloth impregnated with a polyaromatic resin such as polyimide is disclosed. A vacuum bag layup arrangement having stacked in order on a platen a Teflon cloth, a face sheet, a bonding agent made of a thin film of epoxy type resin, a honeycomb core, another film of bonding agent, another face sheet, and another Teflon cloth. A bleeder fabric made of glass cloth is provided to make contact with the Teflon cloth and the evacuation connection for the vacuum bag. The bag has its edges sealed to the platen and then evacuated. While a vacuum is maintained within the bag the epoxy is heat-cured and then the polyimide is heat-cured.

3,703,423
METHOD OF RELUGGING LARGE PNEUMATIC TIRES

Merritt W. Wolfe, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 15, 1969, Ser. No. 885,254
Int. Cl. B29h *17/36;* **B60c** *11/00*
U.S. Cl. 156—96 **10 Claims**



A method of relugging large off-the-road pneumatic tires in which an interlocking relationship is provided among the lugs resulting in a continuous circumferential rib and a tread pattern having improved resistance to driving, breaking and turning torques.

The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawings and the following detailed description.

3,703,424
METHOD OF PRODUCING A WEAR-RESISTANT AREA IN A SURFACE-COVERING MATERIAL

Harry Charnock, Westhoughton, and David E. Bowker, Atherton, England, assignors to Dunlop Holdings Limited
Filed July 23, 1969, Ser. No. 843,964
Claims priority, application Great Britain, July 30, 1968, 36,323/68
Int. Cl. C09j *5/00*
U.S. Cl. 156—272 **7 Claims**

A wear-resistant area is produced in a surface-covering material, e.g. a car carpet, having a pile of thermoplastic flock fibres by subjecting the pile to heat and pressure in an area corresponding to the desired wear-resistant area to fuse the fibres in that area and cooling to set the fused material.

3,703,425
METHOD OF MAKING TRANSPARENT LAMINATED STRUCTURE HAVING TRANSPARENT INTERLAYER

John Delmonte, Glendale, Paul L. Meadows, Lakeview Terrace, and Augusto E. Benavides, Mission Hills, Calif., assignors to Furane Plastics Incorporated, Los Angeles, Calif.
Filed Apr. 29, 1969, Ser. No. 820,116
Int. Cl. B29c *19/00*
U.S. Cl. 156—245 **15 Claims**

Laminated sheets of glass or rigid transparent synthetic plastic sheets for "safety glass" purposes are made by casting the interlayer between the rigid sheets, using certain liquid polyurethane prepolymers, curable at low temperatures. The specific polyurethanes for this purpose have high elastic properties and strong adhesion to the surfaces of the glass or other transparent sheets, which reduces the hazards of flying pieces when the laminate is broken by impact. The casting process has advantages in permitting the simultaneous making of margin gaskets and seals, and the embedment of mechanical or decorative parts.

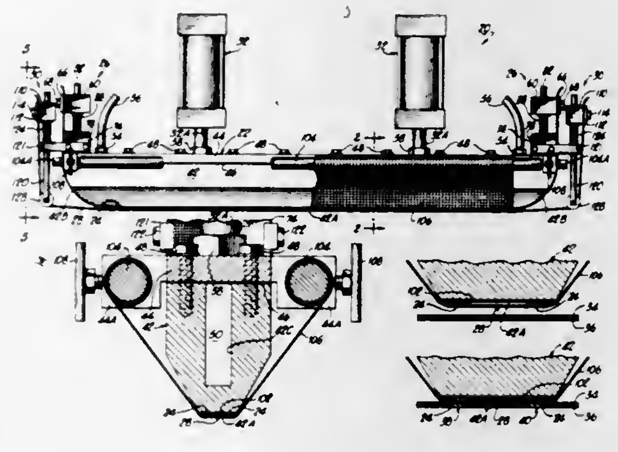
3,703,426
METHOD OF MAKING POLYESTER LAMINATES

William M. Larson, Hudson, and William E. Jackson, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
No Drawing. Continuation of abandoned application Ser. No. 662,320, Aug. 22, 1967. This application Nov. 18, 1970, Ser. No. 90,775
Int. Cl. B32b *27/40;* **C09j** *5/02*
U.S. Cl. 156—308 **6 Claims**

This invention relates to a method of making improved polyester laminates by washing the surface of the polyester with solvent solution of an organic polyisocyanate and then adding an isocyanate type adhesive to the surface and bringing the polyester composition containing the adhesive into contact with the materials to be laminated, either another polyester or a metal, and allowing the adhesive to set and cure.

3,703,427
THERMAL IMPULSE SEALING BAR ASSEMBLY

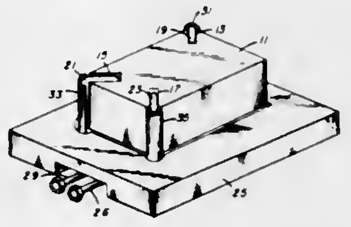
John C. Sellers, 507 Signal Hill Road, Barrington, Ill. 60010, and John W. Schneiter, 1217 E. Fremont, Arlington Heights, Ill. 60004
Filed June 1, 1971, Ser. No. 148,495
Int. Cl. B30b *15/34;* **G05d** *23/00*
U.S. Cl. 156—359 **13 Claims**



The disclosed thermal impulse sealing bar assembly includes an elongated thermally conductive bar defining a hollow chamber through which a cooling fluid is circulated. A flat lower surface of the bar faces the sheet or web material to be sealed, and the ends of the bar have curved or arcuate surfaces merging with the flat lower surface. A pair of flat resistance heating elements are mounted in spaced and parallel positions on the flat surface and include terminal portions at their opposite ends passing over the curved guide surfaces to be clamped in terminal blocks slidably mounted on the bar. The terminal blocks are biased for movement in a direction generally perpendicular to the flat sealing surface to hold the resistance heating elements against the guide and flat surfaces, thereby avoiding any interference between the material to be sealed and the terminal blocks. A layer of low resistivity, electrically conductive material on the terminal portions of the elements limits heating thereof to the part actually pressed against the material to be sealed so as to avoid the formation of "hot spots." A resistance cutting wire is disposed between the heating elements used for sealing.

3,703,428
APPARATUS FOR RESETTING THE CORNER OF DEEP-DRAWN LAMINATED ARTICLES

Ezra C. Polling, Webster, and Charles E. Botsford, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Original application May 2, 1968, Ser. No. 726,114. Divided and this application Oct. 2, 1970, Ser. No. 77,732
Int. Cl. B32b *35/00*
U.S. Cl. 156—382 **1 Claim**



A sheet of metal having a skin of plastic bonded thereto is deep drawn to form a box having an external plastic skin. Then laminating bonds are reset where delamination has occurred, usually at the corners, by heating locally from the inside of the box while concurrently applying pressure to the skin.

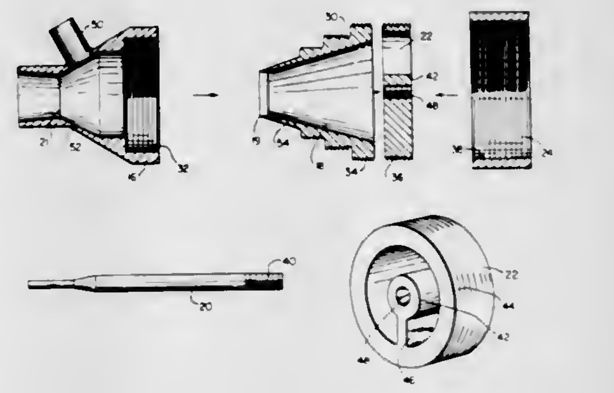
Apparatus for performing this method comprises a core having induction heating coils at the corners, over which the box fits, and a concave boot which fits over the box and has a fluid pressure actuated bladder to press against the corners of the box during the heating step.

An automatic control system provides for repetitive operation in a production line wherein a series of boxes are connected by a web and treated one after the other.

3,703,429
APPARATUS FOR MAKING FILTER MEANS

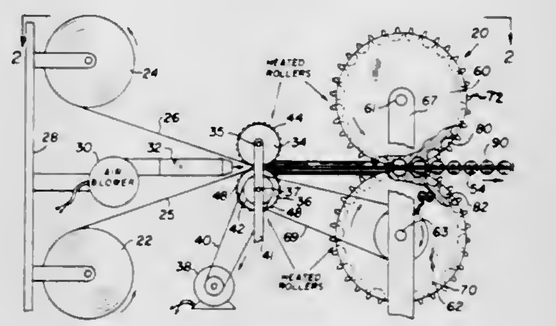
Richard M. Berger, Richmond, and Elwin W. Brooks, Mechanicsville, Va., assignors to American Filtrona Corporation, Richmond, Va.
Division of application Ser. No. 45,109, June 10, 1970, now Patent No. 3,637,447, which is a continuation-in-part of applications Ser. No. 727,477, May 8, 1968, now Patent No. 3,533,416, and Ser. No. 820,355, Apr. 30, 1969, now Patent No. 3,599,646. Said Ser. No. 820,355 being a continuation-in-part of said application Ser. No. 727,477. This application June 23, 1971, Ser. No. 155,705
Int. Cl. D04h *1/44;* **B65h** *5/22*
U.S. Cl. 156—441 **12 Claims**

A method and apparatus for making filter means of a type which is constructed to provide elongated, high surface area, cavities defined on opposite sides of a relatively thin wall formed of filtering material with only the ends of the filter means contacting an overwrapped outer tube thereby presenting maximum available surface area of the material from which the products are formed to the smoke for filtration is disclosed. A tow of a suitable filtering material is passed through an air nozzle containing a mandrel centered therein, the tow thereby achieving a uniformly random, but tubular, configuration and then through a steam curing station followed by an air curing station. The formed rod is then again steam cured and passes to a crimping device which imparts a particular configuration thereto. The crimped rod is then again air cured, wrapped, and cut. In another embodiment, an addition material may be added by means either of a printing applicator device or a pulsating nozzle device.



3,703,430
APPARATUS FOR FABRICATING PLASTIC CUSHIONING AND INSULATING MATERIAL

Joseph L. Rich, 3010 Judith Drive, Merrick, N.Y. 11566
Filed Mar. 12, 1971, Ser. No. 123,732
Int. Cl. B32b *31/00*
U.S. Cl. 156—497 **8 Claims**



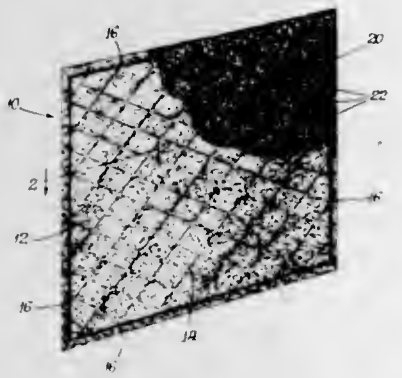
Layers of heat sealable sheet material are passed on opposite sides of a blower to axially spaced pairs of rotating rollers which form seams joining the layers while an air filled passage is maintained between each pair of longitudinal seams. The longitudinally seamed sheet material is passed through a pair of rotating rollers one or both of which have surface recesses forming transverse seams dividing the passages into closed, sealed, expanded, air filled cells.

ERRATUM

For Class 156—583 see:
Patent No. 3,703,590

3,703,431
DECORATIVE PLASTIC WALL TILE

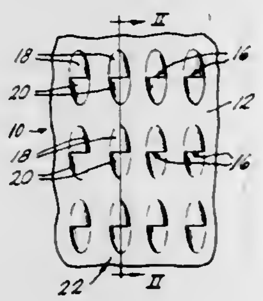
Wayne G. Kemper, 2505 S. Grove Ave.,
Berwyn, Ill. 60402
Continuation-in-part of abandoned application Ser. No. 877,295, Nov. 17, 1969. This application Aug. 3, 1971, Ser. No. 168,771
Int. Cl. B44f *1/00;* **B32b** *3/28;* **E04c** *2/20*
U.S. Cl. 161—6 **3 Claims**



A decorative tile including a transparent body with a smooth outer surface and an embossed or crinkled backing visible through the outer surface but spaced therefrom so as to give the tile a visible, three-dimensional effect.

3,703,432
RAINPROOF VENTILATED PLASTIC SHEET MATERIAL FOR RAINWEAR AND METHOD OF MAKING SAME

John T. Koski, 225 W. Bidwell,
Battle Creek, Mich. 49015
Filed Nov. 18, 1970, Ser. No. 90,844
Int. Cl. B37b *3/10;* **A41d** *3/04*
U.S. Cl. 161—110 **10 Claims**

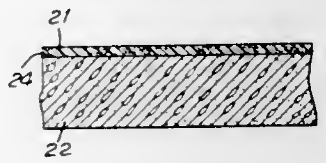


A rainproof, ventilating material is provided utilizing tabs bent at the location of slits in the material to provide shielded ventilation. The material adjacent each slit is bent to form a pair of fingernail-shaped tabs, the direction of the projection of one member of the pair from the surface of the material being opposite that of the other. The pairs of tabs are aligned in one direction, so that the tabs in that one direction alternate in their direction of projection, thus, when properly oriented shielding the lower tabs by the upper tabs.

The material is formed from a substance which may be subjected to molding or deforming conditions, and, which, when molded to the desired shape may be subjected to setting conditions to retain that shape permanently. The tabs are permanently formed by cutting the slits and bending the tabs while subjecting the material to molding conditions, as for example by heating and then setting the material, as for example by cooling.

3,703,433
MOLDED GRANITE

Thomas J. Sargent, Rte. 1, Box 319,
Milford, N.H. 03055
Filed May 26, 1971, Ser. No. 146,891
Int. Cl. B32b *5/16, 19/02*
U.S. Cl. 161—162 **8 Claims**



Molded products comprising flaked natural granite mixed with a resinous binder and cast or molded in or with molds of high surface finish whereby the molded products have the appearance of polished granite.

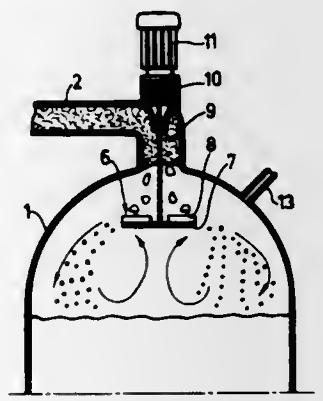
3,703,434
HEAT-ACTIVATABLE ADHESIVE SHEETS

Ronald L. Schaaf, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Filed Mar. 29, 1968, Ser. No. 717,377
Int. Cl. B32b *27/38, 27/34, 15/08*
U.S. Cl. 161—167 **12 Claims**

A self-supporting heat-activatable adhesive sheet comprising a film of thermoplastic polyamide resin coated on both sides with a relatively thin layer of a substantially uniform blend of fusible epoxy resin and amine. The adhesive sheet has excellent shelf life at temperatures up to about 120° F. while being capable of rapidly forming strong heat-resistant compositions on both surfaces of said adhesive sheet when subjected to heat and pressure.

3,703,435
METHOD FOR FINELY DISINTEGRATING PULP, PREFERENTIALLY CELLULOSE PULP, IN CONNECTION WITH THE BLEACHING THEREOF WITH GASEOUS BLEACHING AGENT

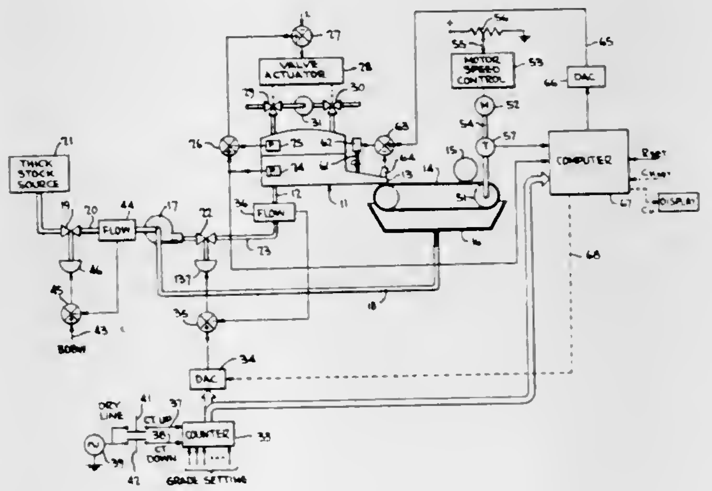
Rudi William Schleinkofer, Nashua, N.H., assignor to Sunds Aktiebolag, Sundsvall, Sweden
Continuation of abandoned application Ser. No. 771,071, Oct. 28, 1968. This application May 14, 1971, Ser. No. 143,648
Claims priority, application Sweden, Nov. 9, 1967, 15,383/67
Int. Cl. D21c *3/26*
U.S. Cl. 162—17 **8 Claims**



In the course of being delivered into a generally vertical bleaching vessel, containing a gaseous bleaching agent in a free space in the upper part of the vessel, a cellulose pulp is subjected to vigorous mechanical working in a direction transverse to the falling direction thereby being finely disintegrated and fluffed.

3,703,436
ANTICIPATORY CONTROL OF HEADBOX SLICE OPENING IN A PAPER MACHINE

James S. Rice, Columbus, Ohio, assignor to Industrial Nucleonics Corporation
Filed Feb. 3, 1970, Ser. No. 8,292
Int. Cl. D21f *1/06*
U.S. Cl. 162—198 **12 Claims**

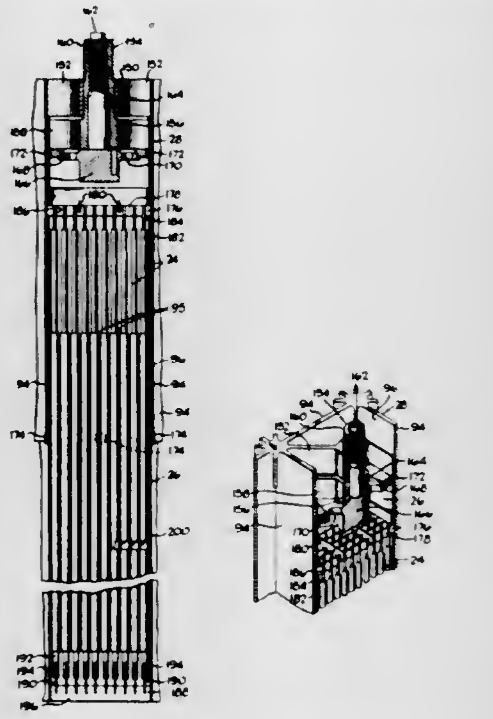


A headbox of a machine producing a fibrous sheet has a slice opening controlled in response to signals indicative of total head of fluid in the headbox, the rate of flow of a fibrous slurry into the headbox and the speed of a Fourdrinier wire receiving a jet of slurry emerging from the headbox slice. The slice opening is controlled to affect formation of the fibrous sheet on the wire. Consistency of the slurry being fed into the headbox is varied to control the position of a dry line on the wire or formation of fibers on the wire. The level of liquid in the headbox is maintained at a predetermined level by a controller. The slice opening is controlled in an anticipatory manner to compensate for the slow response of the total head in the headbox to changes occurring in response to the slurry mass flow rate into and out of the headbox. The controller for the slice opening is provided with deadband.

3,703,437
MEANS FOR SUPPORTING FISSILE MATERIAL IN A NUCLEAR REACTOR

Peter Fortescue, Rancho Santa Fe, and Raymond T. Shanstrom, La Jolla, Calif., assignors to Gulf Oil Corporation
Application Mar. 28, 1967, Ser. No. 648,507, now Patent No. 3,475,272, which is a continuation-in-part of application Ser. No. 374,908, June 15, 1964. Divided and this application Aug. 20, 1969, Ser. No. 870,798
Int. Cl. G21c *1/02*
U.S. Cl. 176—87 **3 Claims**

A nuclear power fast reactor system is described which utilizes gas as a coolant. The reactor system includes a prestressed concrete containment vessel which contains the entire primary system of the reactor, comprising the core, control rod drive mechanisms, coolant circulators, steam generators and associated main coolant ducting. The interior of the vessel is separated into two regions, the lower one containing the core and having provision for explosion absorption and water flooding. The core is comprised of fuel elements supported in a plurality of elongated tubes which depend freely from a generally horizontal grid structure. The tubes are secured in the grid structure and mate therewith at their upper ends.



ERRATUM

For Class 195—103.5 R see:
Patent No. 3,703,591

3,703,438
METHOD FOR THE STABILIZATION OF BLOOD

Stepan Ilich Dovgalev, Igor Nikolaevich Ermolenko, Evgeny Danilovich Buglov, Ivan Petrovich Danilov, and Mikhail Lvovich Longin, Minsk, U.S.S.R., assignors to Belorussky Institut Perelivania Krovi, Minsk, U.S.S.R.
No Drawing. Filed Apr. 8, 1969, Ser. No. 814,458
Int. Cl. A61k *27/10*
U.S. Cl. 195—1.8 **5 Claims**

Stabilization of blood by binding the calcium ions contained therein in the form of an insoluble complex by passing the blood into contact with an anticoagulant comprising insoluble salts of acid esters of cellulose selected from the group consisting of salts of carboxylic acid esters of cellulose, salts of acid esters of cellulose with an inorganic acid containing an organic cation, mixtures of the same with each other, and mixtures of the same with inorganic salts of acid inorganic esters of cellulose. To improve storage stability conservants may be introduced into the decalcified blood. Also, antiseptic agents such as levomycetin can be included. The acid esters may be prepared by reacting cellulose, for example, in the form of medical gauze, with the acids followed by converting the resultant acid esters into salts with salt solutions.

3,703,439
PROCESS FOR THE PREPARATION OF L-BETA-(3,4-DIHYDROXYPHENYL)-ALPHA-ALANINE BY FERMENTATION

Jean Florent, Jean Lunel, and Jacques Renaut, Paris, France, assignors to Rhone-Poulenc S.A., Paris, France
No Drawing. Filed Jan. 20, 1971, Ser. No. 108,185
Claims priority, application France, Jan. 21, 1970, 2,129
Int. Cl. C12d *3/00*
U.S. Cl. 195—29 **14 Claims**

L-β-(3,4-dihydroxyphenyl)-α-alanine is prepared by the microbiological hydroxylation of L-tyrosine using *Vibrio* *tyrosinaticus* ATCC 19,378 as microorganism for the conversion.

3,703,440
PROCESS FOR THE PRODUCTION OF STARCH SYRUPS THAT HAVE FRUCTOSE ON THEIR MOLECULAR ENDS

Shigetaka Okada, Nara, and Naoto Tsuyama, Masashi Kurimoto, and Kaname Sugimoto, Okayama, Japan, assignors to Hayashibara Company, Okayama-shi, Okayama, Japan
No Drawing. Filed Nov. 9, 1970, Ser. No. 88,162
Claims priority, application Japan, Nov. 9, 1969, 44/89,514; Jan. 14, 1970, 45/3,976
Int. Cl. C13k *1/00*
U.S. Cl. 195—31 R **6 Claims**

Process for the production of starch syrups which have oligo-glucosyl-fructose as their main constituents by subjecting amylase of *Bacillus macerans* to a mixture of solutions of liquefied starch and sucrose.

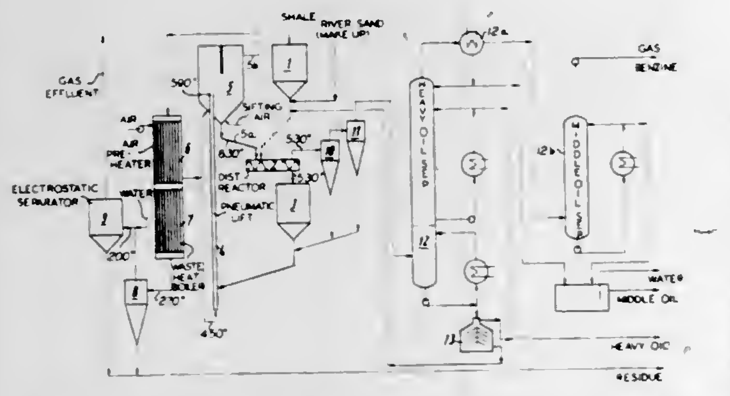
3,703,441
DIAGNOSTIC REAGENTS FOR THE DETERMINATION OF γ-GLUTAMYL TRANSPEPTIDASE IN HUMAN SERUM

Kazuo Nakanishi and Shuzo Takei, Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan
No Drawing. Filed June 17, 1970, Ser. No. 47,141
Claims priority, application Japan, June 23, 1969, 44/49,592
Int. Cl. C12k *1/04*
U.S. Cl. 195—99 **5 Claims**

Diagnostic reagents for the determination of γ-glutamyl transpeptidase in human serum which comprises (1) γ-L-glutamic acid p-nitroanilide, (2) one or more surface active agents selected from the group consisting of amphoteric surface active agents and non-ionic surface active agents and (3) a buffer solution selected from the group consisting of collidine-, boric acid-, Veronal (5,5-diethylbarbituric acid)- and ammonia-buffer solutions. The reagents of this invention are very stable at a high concentration and practically useful for the diagnosis of various types of liver diseases, e.g. cancer of liver, obstructive liver diseases and the like.

3,703,442
METHOD FOR THE LOW-TEMPERATURE DISTILLATION OF FINELY GRANULAR BITUMINOUS MATERIALS WHICH FORM A PULVERULENT RESIDUE IN THE PROCESS

Roland Rammler, Frankfurt, and Paul Schmalfeld, Bad Homburg, Germany, assignors to Metallgesellschaft Aktiengesellschaft
Filed Feb. 18, 1970, Ser. No. 12,327
Claims priority, application Germany, Feb. 25, 1969, P 19 09 263.8
Int. Cl. C10b *49/18*
U.S. Cl. 201—12 **10 Claims**



In a process for low temperature distillation of finely granular bituminous or petroliferous raw materials forming a pulverulent residue during the pyrolysis which comprises:

(a) circulating a heat carrier between a distillation zone and a heating zone;

(b) introducing the raw material into the distillation zone and heating it therein for said distillation with the heat carrier, and for formation therefrom of distillation gases and said pulverulent residue;

(c) withdrawing distillation gases from the distillation zone;

(d) withdrawing the heat carrier and pulverulent distillation residue in admixture from the distillation zone;

(e) pneumatically conveying said admixture through the heating zone with a propellant gas and reheating the heat carrier therein; and

(f) returning the heated carrier to the distillation zone; the improvement which comprises

(g) separating the effluent of the heating zone, comprising said heated carrier, pulverulent distillation residue and propellant gas, into propellant gas and a mixture of heated carrier particles and pulverulent distillation residue, and

(h) sifting pulverulent distillation residue from said mixture of heated carrier and pulverulent material to provide the heated carrier returned to the distillation zone in step (f).

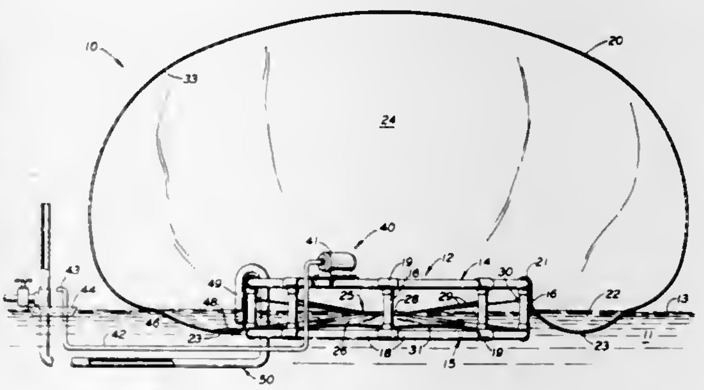
Apparatus for practice of the process is also disclosed.

ERRATUM

For Class 202—185 see:
Patent No. 3,703,592

3,703,443
SOLAR STILL

Archibald D. Evans, 21039 Bryant, Canoga Park, Calif. 91304
Filed Oct. 19, 1970, Ser. No. 81,747
Int. Cl. B01d *3/00*
U.S. Cl. 202—190 **6 Claims**



A solar still. A membrane is carried on a base frame which floats in the liquid environment from which a distillate is to be extracted. The membrane extends as a dome-like, hemispherical roof above the base frame and also contacts the surface of the liquid environment circumferentially of the base frame to encapsulate an air cell within the still. In addition, the membrane is at least partially transparent to permit access of solar energy to the upwardly directed surface of a converted means by which the solar energy produces heat. The converter means is located within the still and supported by the base frame so that at least a portion of the upwardly directed surface on the converter means lies awash of the liquid in which the base frame is floatingly supported in order to facilitate vaporization of the liquid by the heat emitted from the converter means. Although the encapsulated air cell within the still is effectively sealed from the surrounding atmosphere so that the distillate will condense on the interior surface of the membrane, the arrangement of the converter means within the base frame permits continuous access to the converter means by the liquid environment in which the still operates. The upper surface of the converter means is inclined so that the exiting flow of residual liquid and the feeding flow of replenishing liquid induced by their relative specific gravities is augmented to effect a self-cleaning of the converter means. The thermal convection currents within the air cell as well as the action of the wind and waves on the membrane cause the droplets of condensed distillate to flow outwardly and downwardly along the interior surface of the membrane and accumulate within an involute formed by that portion of the membrane which contacts the liquid environment. Also disclosed are means to inflate the membrane and means to remove the distillate.

3,703,444
PRODUCTION OF PURE 2-ETHYL HEXANOL BY THREE-STAGE DISTILLATION

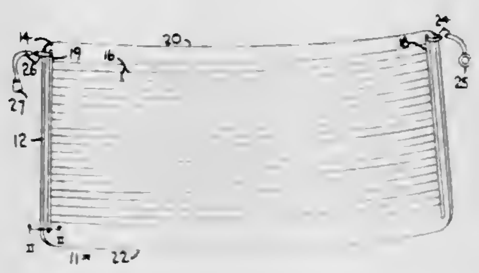
Heinz Graefje, Ludwigshafen, and Erich Flickinger, Frankweiler, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Rheinland-Pfalz, Germany
No Drawing. Filed Oct. 7, 1970, Ser. No. 78,975
Claims priority, application Germany, Oct. 17, 1969, P 19 52 333.2
Int. Cl. B01d *3/14;* **C07c** *29/26*
U.S. Cl. 203—78 **6 Claims**

An improved process for the production of pure 2-ethyl hexanol (obtained by hydrogenation of 2-ethylhexen-2-al-1) by continuous distillation in three columns connected in cascade fashion, the impurities boiling below 2-ethyl hexanol being taken overhead in the first column, pure 2-ethyl hexanol being taken overhead in the second column and the 2-ethyl hexanol still remaining in the higher-boiling impurities being separated in the third column, the improvement comprising the use of a pressure of from 200 to 800 mm. of Hg at the head of the second column and of a pressure of from 70 to 300 mm. of Hg at the head of the third column, sufficient 2-ethyl hexanol being left in the bottoms of the second column to make the concentration thereof at least 50%. 2-ethyl hexanol is used in the manufacture of plasticizers for polyvinyl chloride.

3,703,445
APPLYING ELECTROCONDUCTIVE HEATING CIRCUITS TO GLASS BY ELECTROPLATING

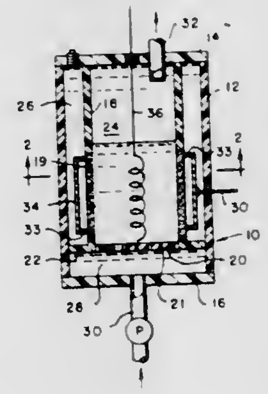
Milton S. Tarnopol, Brackenridge, and Thomas P. Snyder, Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Application July 1, 1969, Ser. No. 838,163, which is a continuation-in-part of abandoned application Ser. No. 737,907, June 18, 1968, which in turn is a continuation-in-part of application Ser. No. 826,433, May 21, 1969. Divided and this application July 20, 1971, Ser. No. 164,396
Int. Cl. C23f *17/00;* **C23b** *5/64;* **C03c** *17/06*
U.S. Cl. 204—15 **10 Claims**

Applying a decorative coating or design of electroconductive material to a glass base. When the base is transparent, the resulting article is useful as a readily heated window from which fog and ice can be readily removed on heating. A frit composition having an appropriate coefficient of expansion, an appropriate maturing temperature, and which matures into a rough, porous coating, is applied to a glass sheet surface in the circuit pattern desired, the sheet is heated and then cooled rapidly to produce a tempered glass sheet having a rough, porous frit coating conforming to the pattern desired for the electroconductive heating circuit, and a conductive metal coating is selectively deposited on the rough, porous frit by electroless plating. The frit may be sensitized by incorporating a minor amount of a sensitizing metal therein or by applying a sensitizing composition.



3,703,446
METHOD OF CARRYING OUT ELECTROCHEMICAL PROCESSES IN A FLUIDIZED-BED ELECTROLYTIC CELL

Ernest W. Haycock, El Cerrito, Calif., and Richard Prober, Trenton, N.J., assignors to Shell Oil Company, New York, N.Y.
Filed Feb. 8, 1968, Ser. No. 704,163
Int. Cl. B01k *3/00;* **C23b** *5/00*
U.S. Cl. 204—23 **2 Claims**



An electrolytic cell using an electrolyte and a particulate electrode in a fluidized condition to achieve a large, continuously depolarized electrode surface area.

3,703,447
METHOD OF COATING NIOBIUM WITH COPPER

Walter Lugscheider, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany
Filed Mar. 27, 1970, Ser. No. 23,359
Claims priority, application Germany, Mar. 29, 1969, P 19 16 292.6
(Filed under Rule 47(b) and 35 U.S.C. 118)
Int. Cl. C23b *5/52*
U.S. Cl. 204—37 R **14 Claims**

A method of coating niobium with copper has the steps of bringing the metallically pure surface of the niobium to be coated into contact with copper that is metallically pure at least at the surface and heating the niobium to a temperature between 800° C. and 2500° C. under a vacuum with a residual gas pressure of at most 10^{-6} torr, whereby the copper is joined to the niobium.

3,703,448

METHOD OF MAKING COMPOSITE NICKEL ELECTROPLATE AND ELECTROLYTES THEREFOR

Richard J. Clauss, Allen Park, Robert Tremmel, Woodhaven, and Donald H. Becking, Birmingham, Mich., assignors to Oxy Metal Finishing Corporation, Warren, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 862,942, Oct. 1, 1969. This application Aug. 31, 1971, Ser. No. 176,688

Int. Cl. C23b *5/32, 5/46, 5/50*
U.S. Cl. 204—40 **20 Claims**

A composite nickel-containing electroplate is formed on a base metal surface by electroplating on the surface an adherent nickel or nickel alloy layer having a thickness of from about 0.15 to 1.5 mils and an average sulfur content of less than about 0.03%. An intermediate nickel or nickel alloy layer, having a thickness of from about 0.005 to 0.2 mils and an average sulfur content of from about 0.05 to 0.3% is then electroplated on the lower layer. An adherent upper nickel or nickel alloy layer having a thickness of from about 0.2 to 1.5 mils and average sulfur content of from about 0.02 to 0.15% is then electroplated on the intermediate layer, the upper layer containing a lower percentage of sulfur then the lower layer. The source of sulfur, for at least the intermediate layer, is provided by including novel thiosulfonates of nitriles or amides in the plating bath for that layer.

3,703,449

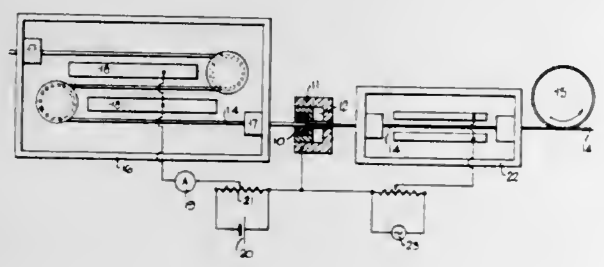
FORMATION OF LUBRICANT COATING BY ELECTROLYSIS

John Peter George Farr and Geoffrey Whaley Rowe, Birmingham, England, assignors to American Metal Climax Inc., New York, N.Y.

Filed Oct. 29, 1970, Ser. No. 85,107

Claims priority, application Great Britain, Nov. 13, 1969, 55,605/69

Int. Cl. C23b *11/02*
U.S. Cl. 204—56 R **18 Claims**



A method of providing a lubricant on an article having an electrically conducting surface, such as a metal article, in order to provide lubrication during metal forming operations, comprises making the article to be coated the anode in an electrolytic cell, the electrolyte of the cell containing a soluble organic sulphur compound and then passing an electric current through the cell whereby a sulphur containing constituent is formed in the electrolyte from which the lubricant coating is produced on the surface of the article. The soluble organic sulphur compound may be thioacetamide or thiourea. If desired a further constituent may be provided in the electrolyte and the lubricant coating may be provided as a result of reaction of the sulphur containing constituent with the further constituent. The further constitutent may be ammonium molybdate.

The lubricant coating may be removed after performance of the metal forming operation by passing the article through a further electrolyte through which a current is passed to remove the lubricant coating.

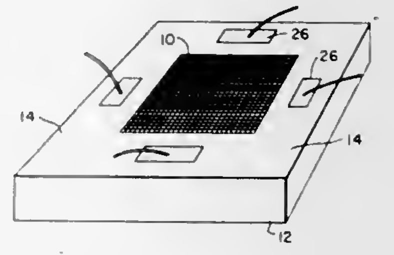
3,703,450

METHOD OF MAKING PRECISION CONDUCTIVE MESH PATTERNS

Joseph J. Bakewell, Boxford, Mass., assignor to Dynamics Research Corporation, Wilmington, Mass.

Filed Apr. 1, 1971, Ser. No. 130,238

Int. Cl. C23b *7/00;* **B01k** *1/00*
U.S. Cl. 204—11 **4 Claims**



A method of fabricating precision conductive mesh patterns on a repetitively usable master plate. The master plate comprises a conductive pattern formed on a nonconductive light transmissive substrate and a non-conductive pattern formed in the interstices of the conductive pattern. A reproduction of the master pattern is formed by uniform plating of a conductive pattern onto the master pattern within a matrix defined by the nonconductive pattern. The plated replica of the master pattern is then peeled from the master plate and mounted in a suitable frame for use.

3,703,451

SOLVENT EXTRACTION AND ELECTROWINNING OF COPPER

Thomas Victor Healy, Abingdon, and Alan Pilbeam, Didcot, England, assignors to United Kingdom Atomic Energy Authority, London, England

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,140

Claims priority, application Great Britain, Sept. 18, 1970. 44,582/70

Int. Cl. C22d *1/16;* **C22b** *3/00, 15/00*
U.S. Cl. 204—106 **9 Claims**

Copper is extracted from dilute aqueous solution by adding excess chloride, reducing dissolved copper from the cupric to the cuprous state, e.g. using sulphur dioxide, and performing a solvent extraction operation using a solution, in an inert water-immiscible liquid, of a tri-(alkyl or aryl) phosphite as an extractant. The copper may be recovered by backwashing the water-immiscible phase with aqueous ammonia, and then depositing the metal by electrolysis.

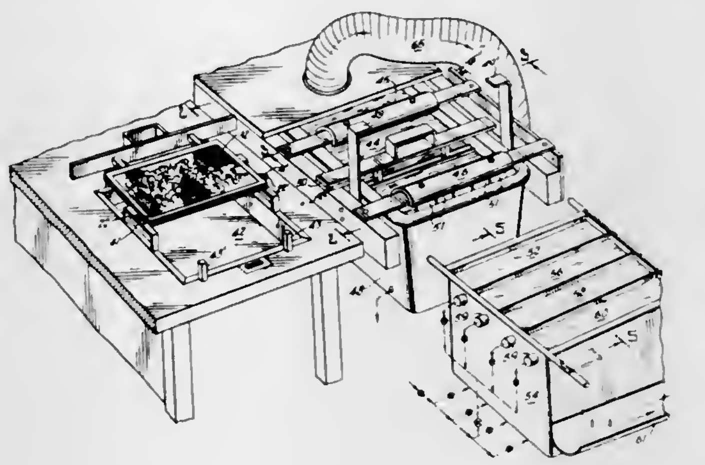
3,703,452

ELECTROPOLISHING OF DRILLED SURGICAL NEEDLES

Howard Beroff, Somerville, and Ernest L. Richmond, North Plainfield, N.J., assignors to Ethicon, Inc.

Continuation-in-part of application Ser. No. 6,878, Jan. 29, 1970. This application Jan. 27, 1972, Ser. No. 221,256

Int. Cl. C23b *3/06, 5/70;* **B23p** *1/10*
U.S. Cl. 204—129.1 **12 Claims**



A large number of steel surgical needles are supported in a magnetic field on a platinum, palladium, rhodium, iridium, or gold anode that is immersed in a magnetic electropolishing bath. The needles supported on the anode are polished by a current that flows through the solution and needles to produce a smooth needle surface that is free of flaws at the point of contact with other needles on the anode.

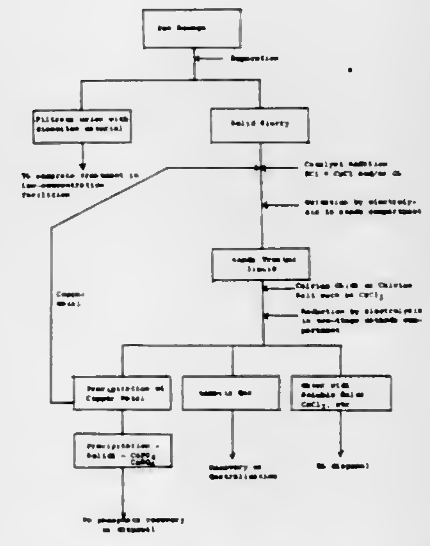
3,703,453

ELECTROLYTIC DESTRUCTION OF SEWAGE

John Gordy, Richmond, British Columbia, and Douglas R. Harris, Delta, British Columbia, Canada, assignors to Stellar Industries Ltd., Vancouver, British Columbia, Canada

Filed Sept. 1, 1970, Ser. No. 68,694

Int. Cl. C02c *5/12*
U.S. Cl. 204—151 **5 Claims**



A method for the electrolytic destruction of waste material such as sewage, organic process waste materials, and the like; involving oxidation by electrolysis in the anode compartment of an electrolytic cell, in the presence of hydrochloric acid and cuprous chloride. This results in the formation of oxidation products. The resulting liquid may be reduced by electrolysis in the cathode compartment of the electrolytic cell, and this will permit recovery of the copper catalyst.

3,703,454

POLYMERIZATION OF TETRAOXANE IN THE PRESENCE OF SULFUR AND SULFUR COMPOUNDS

Yoshiaki Nakase, Masaru Yoshida, and Akihiko Ito, Takasaki, Tadashi Iwai, Kanagawa, Koichiro Hayashi, Sapporo, Seizo Okamura, Kyoto, and Katsumi Kojima, Oimachi, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed May 21, 1970, Ser. No. 39,213

Claims priority, application Japan, May 26, 1969, 44/41,277; Mar. 9, 1970, 45/19,615; Apr. 4, 1970, 45/28,362

Int. Cl. C08d *1/00;* **C08f** *1/16, 3/40*
U.S. Cl. 204—159.21 **16 Claims**

In a process for polymerizing tetraoxane, sulfur or an organic sulfur compound which is admixed to tetraoxane acts as polymerization initiator for tetraoxane. Some of the organic sulfur compounds, such as thiiranes, thiocyanates and trithianoxides, improve heat stability of the produced polyoxymethylene remarkably.

3,703,455

ELECTROCOATING METHOD BASED ON COPOLYMERS CONTAINING MALEIC HALF ESTERS

Kazys Sekmakas, Chicago, Ill., assignor to De Soto, Inc., Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 885,273, Dec. 15, 1969. This application Apr. 21, 1970, Ser. No. 30,588

Int. Cl. B01k *5/02;* **C23b** *13/00*
U.S. Cl. 204—181 **24 Claims**

Styrene and like ethylenic monomers are copolymerized with maleic, fumaric or itaconic half esters; maleic, fumaric or itaconic bis esters being optionally present, at least a portion of the ester groups including a hydrocarbon chain containing 6 or more carbon atoms. The copolymerization is carried out in solution in an ether alcohol, such as 2-butoxy ethanol, or in bulk. The copolymers may be reacted with a small proportion of monoepoxide. The copolymers are dispersible in water with the aid of a base and are particularly adapted to electrodeposit corrosion and detergent resistant films.

3,703,456

METHOD OF MAKING RESISTOR THIN FILMS BY REACTIVE SPUTTERING FROM A COMPOSITE SOURCE

Linus F. Cordes, Schenectady, N.Y., assignor to General Electric Company

Filed Dec. 22, 1969, Ser. No. 887,440

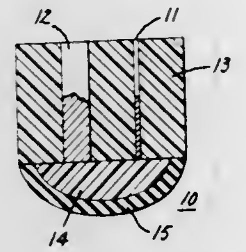
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **7 Claims**

A method of making high resistivity thin film resistors by reactively sputtering a composite source onto a substrate is described. The composite source comprises a first material selected from the group consisting of chromium, silicon, beryllium, aluminum and magnesium and a second material selected from the group consisting of molybdenum, tantalum, tungsten, gold, silver, platinum, osmium and iridium. In the presence of a reactive gas such as nitrogen, the first materials form a high resistivity nitride on the substrate and the second materials either form a low resistivity nitride on the substrate or are non-reactive with the nitrogen and remain in their elemental states. The resulting thin films have resistivities ranging between the high resistivity nitrides and the low resistivity nitrides depending upon the composition of the composite source.

3,703,457

SENSOR WITH ANION EXCHANGE RESIN ELECTROLYTE

Leonard W. Niedrach and William H. Stoddard, Jr., Schenectady, N.Y., assignors to General Electric Company
Filed Oct. 15, 1970, Ser. No. 80,902
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 P **4 Claims**

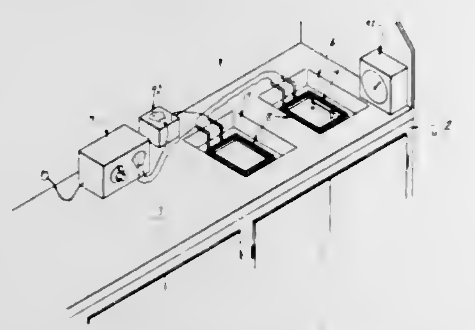


A sensor has a rigid electrically insulating matrix, at least a pair of generally parallel, elongated electrodes embedded in the matrix, the electrodes electrically insulated from each other by the matrix material and opposite ends exposed, an anion exchange resin electrolyte contacting the exposed ends of the electrodes at one end of the matrix and an outer sheath of diffusion barrier material encapsulating at least the electrodes and the electrolyte. Methods of manufacturing such sensors are also described.

3,703,458

ELECTROLYTIC ETCH APPARATUS

Benjamin Hays Read, San Jose, and Rexford E. Black, Sunnyvale, Calif., assignors to Signetics Corporation, Sunnyvale, Calif.
Filed July 13, 1970, Ser. No. 54,491
Int. Cl. B65g *49/00;* **B23p** *1/02*
U.S. Cl. 204—198 **11 Claims**



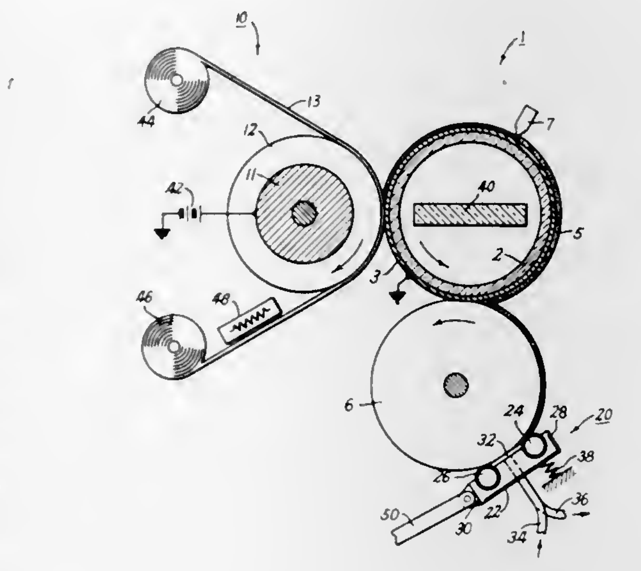
Electrolytic etch apparatus for processing articles having a layer of aluminum thereon comprising a tank adapted to carry an etch solution with an electrode assembly mounted in the tank and having first and second electrodes disposed in the etch solution. A boat assembly adapted to carry a plurality of the articles is disposed in the etch solution so that the articles are in contact with the etch solution. The boat assembly is provided with the means for making intimate electrical contact with each of the articles. The electrode assembly includes means for making contact between the boat assembly and one of the electrodes. A power supply is connected to the electrodes for causing a current to flow between the electrodes and through the etch solution. The electrode assembly also includes means for preventing the formation of a substantial number of bubbles in the vicinity of the articles so that bubbles will not occlude certain areas of the aluminum which are to be removed.

In the method, exposed aluminum carried by the articles is removed electrolytically until certain discontinuities occur in the aluminum, and thereafter the remaining aluminum is removed chemically.

3,703,459

LIQUID APPLICATOR

William S. Little, Jr., Rochester, and Robert H. Townsend, Webster, N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Nov. 9, 1970, Ser. No. 87,720
Int. Cl. B01k *5/02*
U.S. Cl. 204—300 **3 Claims**

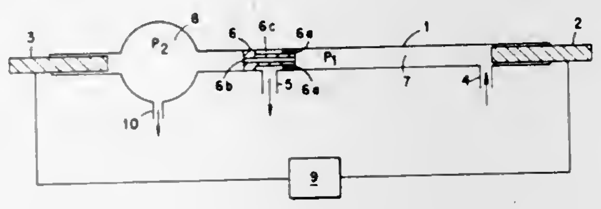


A liquid applicator is provided adapted to apply a liquid film of imaging suspension to the injecting electrode in an electrophoretic imaging system.

3,703,460

NON-EQUILIBRIUM PLASMA REACTOR FOR NATURAL GAS PROCESSING

Frederick H. Shair, Altadena, and Arakali L. Ravimohan, Pasadena, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed Sept. 30, 1970, Ser. No. 76,866
Int. Cl. B01k *1/00;* **C07c** *3/24*
U.S. Cl. 204—327 **2 Claims**



A non-equilibrium plasma reactor for natural gas processing into ethane and ethylene comprising means of producing a non-equilibrium chemical plasma wherein selective conversion of the methane in natural gas to desired products of ethane and ethylene at a pre-determined ethane/ethylene ratio in the chemical process may be intimately controlled and optimized at a high electrical power efficiency rate by mixing with a recycling gas inert to the chemical process such as argon, helium, or hydrogen, reducing the residence time of the methane in the chemical plasma, selecting the gas pressure in the chemical plasma from a wide range of pressures, and utilizing pulsed electrical discharge producing the chemical plasma.

ERRATUM

For Class 204—192 see:
Patent No. 3,703,585

3,703,461

HYDROGENATION PROCESS AND CATALYST

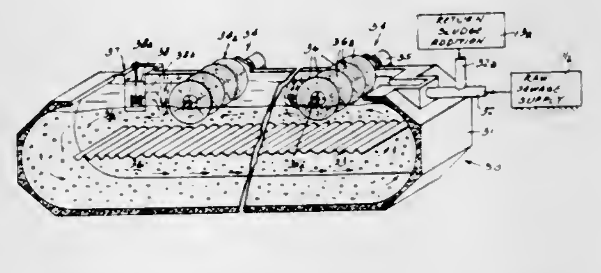
Rowland C. Hansford, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
No Drawing. Continuation-in-part of applications Ser. No. 28,115, Apr. 13, 1970, now Patent No. 3,637,878, and Ser. No. 47,559, June 18, 1970, now Patent No. 3,637,484. This application July 16, 1971, Ser. No. 163,432
Int. Cl. C07c *5/10;* **C10g** *23/04*
U.S. Cl. 208—143 **16 Claims**

Unsaturated hydrocarbons, particularly aromatic hydrocarbons, are hydrogenated to corresponding saturated hydrocarbons, using a novel, highly active catalyst comprising platinum and/or palladium deposited by ion exchange upon certain relatively non-acidic, composites of a silica-alumina cogel or copolymer dispersed in a large-pore alumina gel matrix.

3,703,462

SEWAGE TREATMENT APPARATUS AND METHOD

George W. Smith, 2639 W. 32nd Place, Chicago, Ill. 60609
Filed Jan. 6, 1971, Ser. No. 104,360
Int. Cl. C02c *1/10*
U.S. Cl. 210—7 **11 Claims**



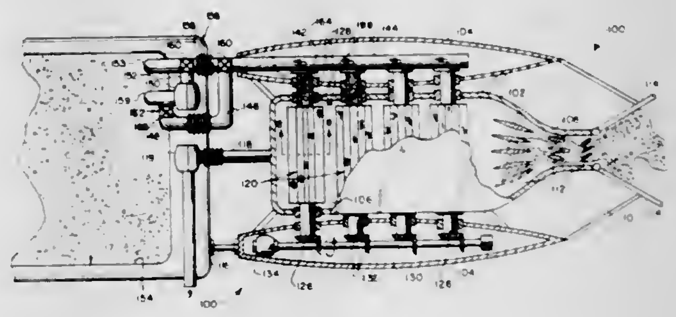
A method and apparatus for use in an activated sludge process of treating waste water wherein raw sewage or the like is mixed with return (activated) sludge and the so-mixed sewage liquor is confined in a tank and subjected to aeration (with or without additional sub-surface aeration) whereby air is co-mingled with the sewage liquor and circulated therein in a predetermined vertical flow pattern through a plurality of flow passageways within the tank so that air is confined within the waste water for a substantial portion of the overall waste water flow circuit. After a period of time, the treated sewage liquor is removed from the tank, the sludge removed for recycle or ultimate disposal and the effluent water clarified and otherwise treated.

3,703,463

SURFACE TENSION METHOD OF AND APPARATUS FOR SEPARATING IMMISCIBLE LIQUIDS

Pravin G. Bhuta, Torrance, Robert L. Johnson, Marina Del Rey, and Douglas J. Graham, Redondo Beach, Calif., assignors to TRW Inc., Redondo Beach, Calif.
Filed June 29, 1970, Ser. No. 50,640
Int. Cl. E02b *15/04*
U.S. Cl. 210—23 **22 Claims**

A method of an apparatus for separating a selected liquid from a second liquid in which the selected liquid is immiscible by a surface tension action utilizing a hollow liquid surface tension separator having a surface tension screen wall is described. The separator is filled with the selected liquid and the outer side of its surface tension screen is placed in contact with the body of immiscible liquids to be separated, such that each screen pore exposed to the second liquid of the body contains a liquid-liquid interface whose interfacial surface tension resists passage of the second liquid through the pore. A pressure differential, less than the critical pressure differential necessary to overcome the interfacial surface tension force acting across the pore, is established across the screen to drive the selected liquid only through the screen into the separator. The primary application of the invention involves the removal or recovery of oil from a water surface utilizing an oil recovery apparatus which floats on and in some cases is propelled along the water surface and is equipped with one or more surface tension liquid separators for extracting the oil from the water surface.



3,703,464

TREATMENT OF OIL SPILLS

Richard L. Ferm, Lafayette, Calif., assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed May 20, 1971, Ser. No. 145,487
Int. Cl. C02b *9/02*
U.S. Cl. 210—40 **10 Claims**

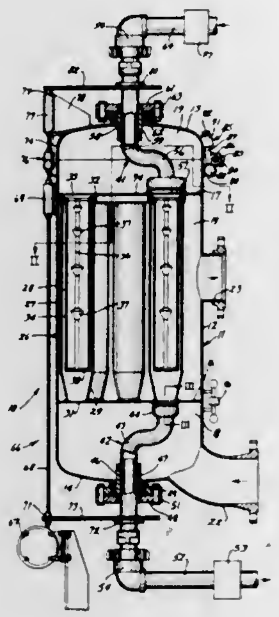
A process for treating petroleum product spills is disclosed, whereby coconut husk material is spread on the spill to absorb it. When the spill is on fresh or salt water in the form of a "slick," the coconut husk material coagulates the film, keeps it from sinking, and forms a mass which lends itself to easy removal from the water by mechanical pickup and the like.

3,703,465

FILTER WITH ROTATING BACKWASH SELECTOR

Thomas L. Reece, Portage, and Thurman E. Bryant, Richland Township, Kalamazoo County, Mich., assignors to Dover Corporation, New York, N.Y.
Filed Dec. 14, 1970, Ser. No. 97,843
Int. Cl. B01d *35/12, 29/38*
U.S. Cl. 210—333 **8 Claims**

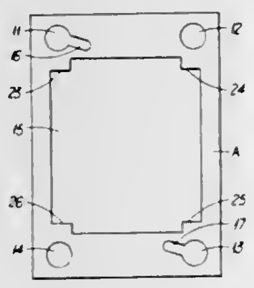
A filter assembly having a plurality of individual filter units, each including an impervious outer skirt surrounding an elongated filter member. A fluid-solid mixture is supplied to the filter units in a direction to flow radially inwardly through the filter member. Rotatable backwash arms are disposed adjacent the opposite ends of the filter units for sequentially and progressively permitting backwashing thereof. The backwash fluid flows radially outwardly through the filter members for removing the collected solid material. The backwash arms are connected to inlet and outlet pipes, with the inlet pipe being connected to an external source of a separate backwash fluid. The backwash arms are rotatably driven by means of an external drive system which includes disconnectible means



for enabling one end of the filter housing to swingably move into an open position, carrying with it the backwash arm connected thereto, for permitting servicing of the individual filter units.

3,703,466
DIALYSERS AND SPACER FRAMES THEREFOR

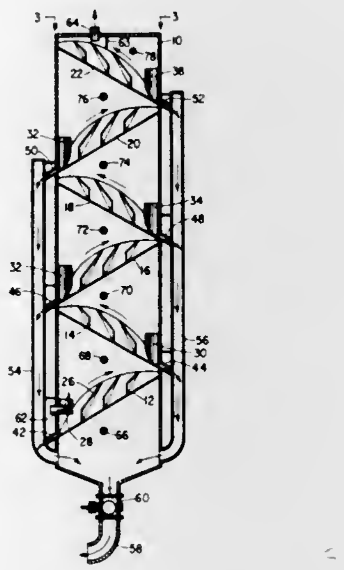
Jean Laforest, Saint-Cyr-Au-Mont-D'Or, Rhone, and Pierre Miton, Lyon, Rhone, France, assignors to Rhone-Poulenc S.A., Paris, France
Filed Dec. 7, 1970, Ser. No. 95,694
Claims priority, application France, Dec. 12, 1969, 6943177
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **7 Claims**



A spacer frame for a dialyser and a dialyser including such a frame formed from thin sheets of resilient material. The spacer frames are made up of at least two thin laminal elements having four duct forming orifices therein, and a central cell forming orifice. Extension portions are provided for two of the duct forming orifices in one of a laminal element and extension parts are provided for the cell forming orifice of the other laminal element, the extension parts and portions overlying to provide a communication between the two duct forming orifices and the cell, no one laminal element having a channel extending from a duct forming orifice to a cell forming orifice, thus reducing leakage and pressure loss.

3,703,467
VERTICAL SEPARATOR FOR DRILLING FLUIDS

James L. Lummus, Tulsa, Okla., and Leroy J. Field, Calgary, Alberta, Canada, assignors to Pan American Petroleum Corporation, Tulsa, Okla.
Filed Jan. 28, 1971, Ser. No. 110,425
Int. Cl. B01d *21/10*
U.S. Cl. 210—522 **9 Claims**



This invention relates to a separator for removing cuttings from drilling fluid. This separator has a series of inclined flow plates inside a vertical tank. The flow planes or plates are zigzagged, that is, adjacent plates are inclined in opposite direction. Each plate is provided with vertical, slanting baffles. The flow path of the solids carrying drilling fluid begins at the bottom and flows up over each plate and baffle system and out the outlet at the top. Each plate is provided with a drain at its lower end for removing trapped solids.

3,703,468
WATER-SCAVENGING COMPOSITION FOR HYDRAULIC FLUIDS

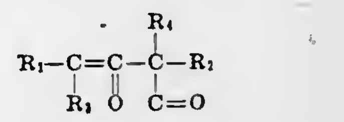
Samuel Chess, Palos Verdes Estates, and Bruce B. Cleveland, San Pedro, Calif., assignors to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Filed Mar. 9, 1971, Ser. No. 122,554
Int. Cl. C09k *3/00*
U.S. Cl. 252—77 **8 Claims**

Water-scavenging compositions are provided containing a mixture of (a) polymethylene polyphenyl polyisocyanate and (b) a 2,2-di(lower-alkoxy)propane or a tri(lower-alkyl)orthoformate or mixtures thereof. These compositions are particularly useful in combination with hydraulic fluids which are to be operated at temperatures below the freezing point of water.

3,703,469
LOW-FOAMING RINSING, WASHING AND CLEANING COMPOSITIONS

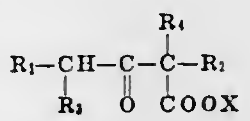
Werner Stein, Erkrath-Unterbach, and Klaus Flory, Leimen, Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany
No Drawing. Filed Dec. 9, 1970, Ser. No. 96,672
Claims priority, application Germany, Dec. 31, 1969, P 19 65 639.4
Int. Cl. C11d
U.S. Cl. 252—89 **14 Claims**

Low-foaming rinsing, washing and cleaning compositions comprising (a) from 90% to 99.9% by weight of at least one compound having a cleaning or complexing action, and (b) from 0.1% to 10% by weight of at least one foam-inhibiting compound of the Formula I



$$R_1-\underset{R_3}{\underset{|}{C}}=\underset{O}{\underset{\|}{C}}-\overset{R_4}{\overset{|}{\underset{C=O}{\underset{|}{C}}}}-R_2 \qquad (I)$$

and its saponification product of the Formula II



$$R_1-\underset{R_3}{\underset{|}{CH}}-\underset{O}{\underset{\|}{C}}-\overset{R_4}{\overset{|}{\underset{COOX}{\underset{|}{C}}}}-R_2 \qquad (II)$$

wherein R_1 and R_2 represent hydrocarbon radicals with 8 to 30 carbon atoms and R_3 and R_4 represent hydrogen or hydrocarbon radicals with 1 to 30 carbon atoms, and X represents a cation.

3,703,470
STORAGE STABLE DETERGENT COMPOSITION

William R. Brennan, Cincinnati, Ohio, assignor to Chemed Corporation, Cincinnati, Ohio
No Drawing. Filed Oct. 6, 1970, Ser. No. 78,626
Int. Cl. C11d *7/56*
U.S. Cl. 252—99 **2 Claims**

A chlorinated machine dishwashing detergent composition and process of preparing same. The process includes spraying a mixture of a poly(oxyalkylene) glycol defoamer and a low foaming organic, non-ionic surfactant onto an agitated mass of anhydrous detergent salt. The mixture is then sprayed with a solution of a water-soluble resin. The remaining ingredients of the composition typically including detergent salts and a chlorinating agent are then blended with the encapsulated combination to comprise a storage stable detergent composition which retains both available chlorine and low foaming characteristics.

3,703,471
SYNERGISTIC ANTISEPTIC COMPOSITIONS

Moneeb Zakaria, Chicago, Leo A. Raphaelian, Wilmette, David Taber, Evanston, and James Brown, Jr., Chicago, Ill., assignors to Armour-Dial, Inc., Chicago, Ill.
No Drawing. Filed July 20, 1970, Ser. No. 56,719
Int. Cl. C11d *3/48*
U.S. Cl. 252—107 **4 Claims**

Compositions possessing antibacterial activity through the effect of synergistic mixtures of 2,2'-methylene-bis-(3,4,6-trichlorophenol) - di - (N - methylcarbamate) and 3,3',4,4'-tetrachlorocarbanilide.

3,703,472
PINE-AMMONIA DETERGENT COMPOSITION

Irving Franklin Shaw, East Rockaway, and Stephen David Hinden, Bronx, N.Y., assignors to West Laboratories, Inc., Long Island City, N.Y.
No Drawing. Filed July 29, 1970, Ser. No. 59,374
Int. Cl. C11d *9/50, 1/18, 1/50*
U.S. Cl. 252—107 **3 Claims**

A pine-ammonia detergent composition is provided wherein the composition exhibits a predominant ammonia odor at the product level which is reversed to a predominant and lingering pine odor at the use dilution level by providing a pine oil to ammonia ratio of at least about 1:1 in the detergent composition and, preferably, from about 2:1 to 10:1.

3,703,473
SEQUESTERING AGENTS FOR METAL ION CONTAMINATION OF ALKYL-AROMATIC HYDROCARBONS

Ralph H. Lasco, Painesville, Ohio, assignor to Diamond Shamrock Corporation
No Drawing. Original application June 29, 1966, Ser. No. 561,340, now Patent No. 3,580,854. Divided and this application Aug. 17, 1970, Ser. No. 64,619
Int. Cl. B01j *1/10;* **C07c** *17/14, 75/14*
U.S. Cl. 252—188.3 **10 Claims**

Metal ion contamination in alkyl-aromatic hydrocarbons, such as trace amounts of iron in p-xylene, is sequestered with a synergistic mixture of agents. This mixture contains a phosphorus halide plus an organic phosphate. Such sequestration permits successful side-chain halogenation of even visibly contaminated hydrocarbons. The organic phosphate is provided by an aryl phosphate, an alkyl phosphate, or their mixtures.

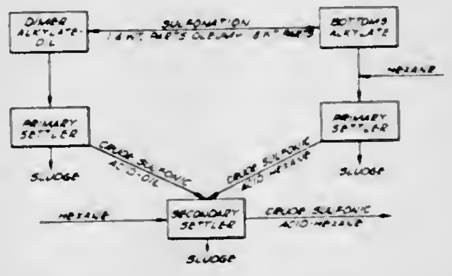
3,703,474
ENCAPSULATION PROCESS

Hans F. Huber, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
No Drawing. Filed Aug. 21, 1967, Ser. No. 661,822
Int. Cl. B01j *13/02;* **B44d** *1/02*
U.S. Cl. 252—316 **5 Claims**

A process is provided for preparation of minute capsules wherein particles of intended internal phase material which have been dispersed individually in a liquid manufacturing vehicle are coated by a solid polymeric film-forming material. Polymeric material is precipitated from solution in the manufacturing vehicle or from solution in the intended internal phase material due to a "zone of insolubility" established at the interface between the particles and the manufacturing vehicle. The particles are either liquid droplets or solid particles having an associated liquid therewith. The novel process is utilized to encapsulate particles which are, to some degree, miscible with the manufacturing vehicle.

3,703,475
PREPARATION OF OIL SOLUBLE SULFONIC ACIDS USEFUL AS DISPERSANT ADDITIVES

Roy C. Sias, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.
Filed June 21, 1971, Ser. No. 155,081
Int. Cl. B01f *17/12*
U.S. Cl. 252—353 **20 Claims**



A sulfonic acid composition is prepared by separately sulfonating (a) an alkylate composition consisting essentially of one or more monoalkaryl compounds in which the alkyl substituent contains from about 20 to about 40 carbon atoms, and (b) an alkylate composition containing from about 5 weight percent to about 35 weight percent diphenylalkanes, from about 5 weight percent to about 50 weight percent alkylated tetralins, and from about 25 weight percent to about 75 weight percent dialkylbenzenes, and having an average molecular weight of from about 300 to about 500. The sulfonic acid reaction mixtures derived from the two alkylates are then separately gravity settled and a primary acid-sludge split is taken to remove the sludge from each reaction mixture. The de-sludged crude sulfonic acids from the two alkylates are then mixed and dissolved in hexane. The hexane solution of the mixed sulfonic acids is then permitted to settle and another acid-sludge split is made to remove the sludge. The first alkylate starting material may be a so-called dimer alkylate prepared by alkylating benzene with a dimerized tetramer of propylene, and the second alkylate starting material may be a bottoms fraction yielded in the fractionation of an alkylate mixture produced by alkylating benzene with normal chloroparaffins containing 8 to 18 carbon atoms.

3,703,476
METHOD FOR FORMING AN OILY FLUID-WATER-SOLUBLE SOLID PARTICLES SLURRY

Paul E. Titus, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.
Filed Oct. 27, 1969, Ser. No. 869,769
Int. Cl. B01j *13/00*
U.S. Cl. 252—309 **7 Claims**

A method for forming a slurry of an oily fluid and water-soluble solid particles for transportation through a pipeline by flowing a substantial amount of water-soluble solid particles through a mixer while continuously flowing an oily fluid into contact with the particles flowing through the mixer in an amount in excess of that sufficient to form a slurry therewith and under flow conditions whereby turbulence is created whereby the resulting turbulence effects distribution of the solid particles in the oily fluid. Excess oily fluid is then removed from the slurry while leaving sufficient oily fluid therein to maintain the slurry in a flowable condition and the slurry after removal of the excess oily fluid, may be flowed into a pipeline for transportation therethrough.

3,703,477
CORROSION INHIBITOR CONTAINING SULFURIZED TALL OIL

Loyd W. Jones, Tulsa, Okla., assignor to Pan American Petroleum Corporation, Tulsa, Okla.
No Drawing. Filed Jan. 18, 1971, Ser. No. 107,585
Int. Cl. C23f *11/16, 11/14*
U.S. Cl. 252—391 **8 Claims**

A corrosion inhibitor includes an amine salt of sulfurized tall oil fatty acids, or equivalents. The usual emulsion problems accompanying use of amine salts of ordinary tall oil fatty acids are overcome by sulfurizing these acids, using an excess of the sulfurized acids over the amount necessary to neutralize the amine and including as an extender or cosurfactant an ethoxylated polypropylene glycol. The inhibitor should also include a little water, to reduce hazing, and a low molecular-weight alcohol, to reduce the pour point of the composition, and a solvent to decrease the amine salt concentration.

3,703,478
THERMISTORS

Robert C. De Vries, Burnt Hills, and James F. Fleischer, Scotia, N.Y., assignors to General Electric Company
Filed July 1, 1971, Ser. No. 158,802
Int. Cl. H01c *7/04;* **H01b** *1/08*
U.S. Cl. 252—521 **11 Claims**

Thermistors are provided in which the thermally sensitive semiconducting material consists essentially of a compound having the formula:

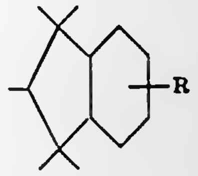
$$PbO\cdot PbZ''O_4$$

wherein Z'' is a member selected from the group consisting of chromium, molybdenum, and mixtures thereof, and 0.05–5.0 mole percent of a compound having the formula M_2O_3, wherein M is a member selected from the group consisting of scandium, yttrium, and the rare earth elements. The thermistor device can be made by dipping two closely spaced electrical conductors into a melt of the thermally sensitive semiconducting material to form an element of the material between the conductors.

3,703,479
SATURATED INDANE DERIVATIVES AND PROCESSES FOR PRODUCING SAME

Ernst T. Theimer, Rumson, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.
No Drawing. Original application Aug. 18, 1969, Ser. No. 851,048. Divided and this application Sept. 28, 1971, Ser. No. 184,641
Int. Cl. A61k *27/00*
U.S. Cl. 252—522 **3 Claims**

A perfume composition containing as an essential fragrance ingredient a saturated indane compound of the formula



wherein R is carbonyl oxygen.

3,703,480
FABRIC-SOFTENER COMPOSITIONS

Paul Sheldon Grand, South Bound Brook, and Harold Eugene Wixon, New Brunswick, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
No Drawing. Filed Nov. 16, 1970, Ser. No. 90,133
Int. Cl. C11d *1/40, 1/50, 1/58*
U.S. Cl. 252—524 **13 Claims**

A washing-cycle fabric softener consisting essentially of a cationic quaternary ammonium fabric softener and an amino polyureylene resin wherein the weight ratio of softener to resin is from about 0.16:1 to about 4:1 for di-higher alkyl quaternary ammonium softeners and 0.5:1 to 2:1 for imidazoline softeners. Such compositions effectively soften textiles in the presence of anionic detergent compositions. Another aspect of the invention is detergent-softener compositions containing the washing-cycle softener composition in combination with an anionic detergent and, optionally, a water-soluble builder salt. Also within the scope of the invention is a method of softening textiles.

3,703,481
AQUEOUS-BASED COSMETIC DETERGENT COMPOSITIONS

Graham Barker, Fair Lawn, N.J., and Herman W. Campbell, Chicago, Ill., assignors to Witco Chemical Corporation, New York, N.Y.
No Drawing. Filed Jan. 25, 1971, Ser. No. 109,614
Int. Cl. C11d *1/20*
U.S. Cl. 252—546 **11 Claims**

Improved aqueous detergent compositions for cosmetic applications comprising water, a synthetic organic detergent, and from about 1–20%, by weight, of an ammonium, alkanolamine or alkali metal salt of a monoester of a C_3–C_6 saturated aliphatic dicarboxylic acid with a fatty acid alkanolamide. The compositions exhibit improved properties with regard to emolliency, wetting, lathering and the like.

ERRATA

For Classes 252—470, 252—501 and 260—45.95 R see:
Patents Nos. 3,703,586, 3,703,593 and 3,703,594

3,703,482
POLYURETHANE FOAM

Fred A. Coglianese, Hackettstown, and John E. McCorkle, Somerville, N.J., assignors to Johns-Manville Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 102,375, Apr. 12, 1961. This application Mar. 15, 1962, Ser. No. 180,007
Int. Cl. C08g *22/04*
U.S. Cl. 260—2.5 AK **9 Claims**

The invention relates to the polyurethane foam art and comprises producing polyurethane foams wherein a wood resin containing active hydrogens is incorporated into either or both of the polymerizable foam ingredients.

3,703,483
POLYMERIZATION PROCESS AND CATALYST SYSTEM THEREFOR

John E. Bozik, Pittsburgh, Harold E. Swift, Gibsonia, and Ching-Yong Wu, Pittsburgh, Pa., assignors to Goodrich-Gulf Chemicals Inc., Cleveland, Ohio
No Drawing. Original application Mar. 10, 1969, Ser. No. 812,536, now Patent No. 3,565,875, dated Feb. 23, 1971. Divided and this application July 9, 1970, Ser. No. 61,013
Int. Cl. C08g *23/14*
U.S. Cl. 260—2 A **9 Claims**

Process for polymerizing olefins, diolefins and alkylene oxides in the presence of a catalyst system comprised of an iron complex, a trialkyl aluminum compound and a bidentate ligand capable of both pi (π) and sigma (σ) bonding to form a five or six-membered ring.

3,703,484
POLYURETHANE FOAM PROCESS USING DISTANNOXANE/AMINOALCOHOL CATALYST COMBINATION

Akizo Keshi, Takatsuki, Kunio Yoshii, Osaka, Makoto Yokoo, Toyonaka, and Kaichi Nakai, Itami, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
No Drawing. Continuation of abandoned application Ser. No. 656,340, July 27, 1967. This application Dec. 2, 1970, Ser. No. 94,562
Claims priority, application Japan, July 29, 1966, 41/49,930; Sept. 10, 1966, 41/60,050
Int. Cl. C08g *22/38, 22/42, 22/46*
U.S. Cl. 260—2.5 AC **5 Claims**

Non-yellowing flexible polyurethane foam is prepared by reacting dimethylbenzene ω,ω'-diisocyanate and polyol in the presence of a blowing agent, monoamino alcohol having 1 to 4 carbon atoms and octaalkyl-stannoxane catalyst.

3,703,485
PROCESS FOR PRODUCING VINYL RESIN FOAMS

Nicolas Fischer, Paris, France, assignor to Rhone-Progil, Paris, France
No Drawing. Continuation of abandoned application Ser. No. 699,297, Jan. 22, 1968. This application Dec. 21, 1970, Ser. No. 100,538
Claims priority, application France, Feb. 6, 1967. 93,856
Int. Cl. C08f *47/08*
U.S. Cl. 260—2.5 P **12 Claims**

The process for the preparation of cellular foamed products of polyvinyl resin plastisols in which the plastisol is formulated to contain an alkali metal alkylsulphate as an essential component in an amount within the range of 1–15 parts by weight per 100 parts by weight of resin or an alkali metal alkylsulphate and alkanolamine alkylsulphate and preferably the combination of an alkali metal alkylsulphate, an alkanolamine alkylsulphate, an alkylene oxide-alcohol or phenol condensation product and an alkanolamide in the ratio of 1–15 parts by weight of the alkali metal alkylsulphate, 1–10 parts by weight of the alkanolamine alkylsulphate, 0.5–4 parts by weight of the condensation product and 0.1–4 parts by weight of the alkanolamide per 100 parts by weight of resin, after which the mixture is foamed by agitation and heated to set the foamed plastisol.

3,703,486
PROCESS FOR FOAMING ORGANIC LIQUIDS

Joseph W. Keil, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
No Drawing. Application Apr. 28, 1965, Ser. No. 451,617, now Patent No. 3,511,788, dated May 12, 1970, which is a continuation of abandoned application Ser. No. 430,193, Feb. 3, 1965, which in turn is a continuation-in-part of abandoned application Ser. No. 319,512, Oct. 28, 1963. Divided and this application Aug. 27, 1969, Ser. No. 853,497
Int. Cl. C08c *17/08*
U.S. Cl. 260—2.5 AA **10 Claims**

A process is disclosed for preparing a foam which comprises adding at least 0.1% by weight of a copolymer consisting essentially of SiO_2 units and units selected from the group consisting of

$$(CH_3)_3SiO_{1/2} \text{ and } Q(CH_3)_2CiO_{1/2}$$

units, wherein Q is a radical containing a solubilizing group that makes the copolymer compatible with the material to which it is added, and the ratio of SiO_2 units to the total $(CH_3Si$ and $Q(CH_3)_2Si$ units is in the range of 1:0.6 to 1:1.2, to an organic liquid having a surface tension of at least 22.2 dynes per centimeter at 20° C. when in contact with air, and then expanding said liquid with a gas.

3,703,487
INTUMESCENT COATING COMPOSITION

Joseph Green, East Brunswick, and Shirley H. Roth, Highland Park, N.J., and John J. Seipel, Amber, Pa., assignors to Cities Service Company, New York, N.Y.
No Drawing. Filed Nov. 5, 1971, Ser. No. 196,230
Int. Cl. C08j *1/20*
U.S. Cl. 260—2.5 FP **9 Claims**

A binder showing thermal change at a suitable temperature is used to dissolve or disperse a bis(aromatic sulfonamide) intumescent agent wherein the aromatic rings are linked by a divalent functional group, such as oxy, thio, sulfinyl, sulfonyl, imino, ureido, thioureido, guanido, carbonate, phosphate, or alkylene group. Among the preferred binders are suitable vinyl chloride-vinylidene chloride copolymers and chlorinated and chlorosulfonated polyethylenes. The preferred intumescent agents are those in which two benzenesulfonamide groups are linked by an oxy, ureido, sulfonyl, or imino group.

3,703,488
PROCESS FOR REUSE OF POLYESTER RESIN

Donald E. Morton, Edwardsville, Ill., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
No Drawing. Filed Mar. 22, 1968, Ser. No. 715,185
Int. Cl. C08g *53/22*
U.S. Cl. 260—2.3 **7 Claims**

The invention is a method for depolymerizing polyester resin such as high molecular weight scrap by charging the resin with a small amount of a material selected from the group consisting of materials from which the polyester resin is derived into a worm extruder and extruding the mixture at a temperature of from 260 to 320° C. The high molecular weight resin is reduced in viscosity to a degree of polymerization in the range of from about 10 to about 40 and may be reused in the preparation of new resin.

3,703,489

PROCESS FOR PRODUCING POLYURETHANE FOAMS

Edward L. Morehouse, New City, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 842,751, May 5, 1969, which is a division of application Ser. No. 573,133, Aug. 12, 1966, now Patent No. 3,505,377. This application Apr. 6, 1971, Ser. No. 131,765

Int. Cl. C08g *22/46;* **B01f** *17/54*

U.S. Cl. 260—2.5 AH **14 Claims**

A process is provided for the production of a flexible polyurethane foam wherein particular siloxaneoxyalkylene block copolymers are employed. The oxyalkylene block of the copolymer has a molecular weight of at least 1500 and the formula, $R'O(C_3H_6O)_m(C_2H_4O)_n$, wherein R' is a monovalent hydrocarbon group having from 1 to 10 carbon atoms. The siloxane block of the copolymer comprises at least 40 and up to 200 dimethylsiloxane units and constitutes from 15 to 70 weight percent of the block copolymer. The siloxaneoxyalkylene copolymers employed in the process have improved potency for the stabilization of polyether urethane foams and may be used in the form of a solution in a water-soluble organic solvent.

3,703,490

DICYCLOPENTADIENE DIEPOXIDE AS A THERMAL STABILIZER FOR POLY(VINYL CHLORIDE)

Harold R. Hersh and Richard W. Sauer, Cherry Hill, N.J., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed Mar. 1, 1971, Ser. No. 119,918

Int. Cl. C08f *45/62*

U.S. Cl. 260—23 XA **2 Claims**

Thermal stabilization of polyvinyl chloride utilizing metal salts can be improved when cycloaliphatic epoxides are utilized for a synergistic stabilizing effect.

3,703,491

ABS RESIN COMPOSITION

Yuzi Takayama, Kamakura, Yutaka Ichimura, Yokohama, Shunsuke Minmmi, Ohtake, and Takanobu Aoyagi and Fumio Takeda, Yokohama, Japan, assignors to Nitto Chemical Industry Co., and Mitsubishi Rayon Co., Ltd., Chuo-ku, Tokyo, Japan

No Drawing. Filed Dec. 11, 1970, Ser. No. 97,331

Claims priority, application Japan, Dec. 12, 1969, 44/99,471

Int. Cl. C08f *15/40*

U.S. Cl. 260—23.7 M **5 Claims**

A thermoplastic resin composition comprising (I) 20 to 70 parts by weight of a copolymer consisting of 20 to 50 parts by weight of a diene type rubbery polymer having a gel content of at least 75% and an average particle diameter of at least 0.2μ and a resinous polymer consisting of 40 to 60 parts by weight of an aromatic vinyl compound and 10 to 30 parts by weight of an unsaturated aliphatic nitrile compound, the proportion of said resinous polymer chemically bonded to the abovementioned rubbery polymer being 15 to 50 parts by weight per 100 parts by weight of the rubbery polymer, the specific viscosity of the remaining unbonded resinous polymer being 0.5 to 0.9, (II) 30 to 80 parts by weight of a polymer having a specific viscosity of 0.45 to 0.9 which comprises 65 to 85 parts by weight of an aromatic vinyl compound and 35 to 15 parts by weight of an unsaturated aliphatic nitrile compound, (III) 0.1 to 3 parts by weight of a metal salt of a fatty acid and (IV) at least 0.01 part by weight of an organosilicon compound. Said composition is excellent in impact resistance, processability and appearance. When merely subjected to simple melt-extrusion, the composition can give a molded article which is free from such drawbacks as seen in conventional molded articles.

3,703,492

PROCESS FOR THE PREPARATION OF AQUEOUS EMULSIONS OF WATER-RESISTANT VINYL ACETATE-ETHYLENE COPOLYMERS

Shiro Masuda, Takashi Ohkubo, and Yu Furukawa, Niigata, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Apr. 21, 1970, Ser. No. 30,574

Claims priority, application Japan, Apr. 21, 1969, 44/30,253

Int. Cl. C09j *3/26*

U.S. Cl. 260—27 EV **14 Claims**

A process for the production of ethylene-vinyl acetate copolymer emulsions comprising copolymerizing vinyl acetate and ethylene in the presence of rosin at a temperature not exceeding 65° C. and at a pressure of 10–100 kg./cm.² gauge.

3,703,493

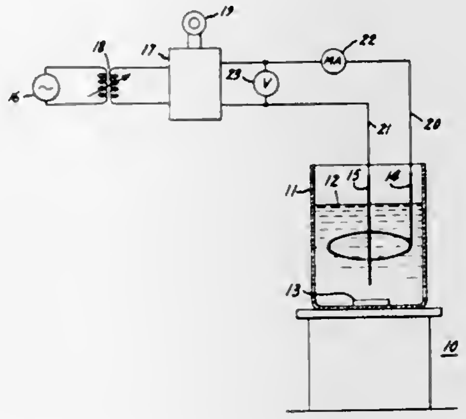
PREPARATION OF POLYAMIDE-ACID SOLUTION IN AQUEOUS TERTIARY AMINE

Fred Holub, 163 Birch Lane, Scotia, N.Y. 12302

Original application May 5, 1966, Ser. No. 548,000, now Patent No. 3,507,765, dated Apr. 21, 1970. Divided and this application July 1, 1969, Ser. No. 870,861

Int. Cl. C08g *20/32*

U.S. Cl. 260—29.2 N **13 Claims**



Polyamide-acid solutions are made by forming in water an admixture of about equimolar dianhydride and diamine, and a tertiary amine and optionally a secondary amine, at temperatures below 40° C. to yield solutions substantially free of imide groups. Tertiary amines include pyridine, dimethylethanolamine, and N,N,N',N'-tetramethylbutanediamine. The product may be cast coated or electrodeposited and cured by heating at 125° C. to 300° C. to produce insulative films.

3,703,494

RESOLE VARNISHES WHEREIN PHENOL IS ALKYLATED WITH A DICYCLOPENTADIENE-CONTAINING MIXTURE AND THEN CONDENSED WITH FORMALDEHYDE TO PRODUCE THE RESOLE

George J. Anderson, Wilbraham, and Ronald H. Dahms, Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 747,437, July 25, 1968. This application Mar. 1, 1971, Ser. No. 119,898

Int. Cl. C08g *5/06;* **C09d** *3/54*

U.S. Cl. 260—29.3 **9 Claims**

Varnishes of resole resins in largely non-aqueous organic solvents, especially lower alkanols, produced by first making a resole under basic aqueous conditions from formaldehyde and a phenol which has been previously reacted under Friedel Crafts conditions with a specific mixture of dicyclopentadiene, cyclopentadiene/acyclic conjugated diene codimers, and conjugated dienes and thereafter dissolving such resole in such organic solvent. These varnishes are useful in impregnating sheets and in making laminates therefrom.

3,703,495

PROCESSABLE POLYESTER COMPOSITIONS

Winston J. Jackson, Jr., Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 811,667, Mar. 28, 1969. This application Apr. 19, 1971, Ser. No. 135,432

Int. Cl. C08g *51/50*

U.S. Cl. 260—30.6 R **10 Claims**

A composition of matter comprising a polyester of a bisphenol, at least one aromatic dicarboxylic acid, and at least one aromatic hydroxy acid, blended with from about 2 to about 30 percent by weight of a triaryl phosphate, having reduced glass transition and heat-distortion temperatures, these compositions being more amenable to processing techniques.

3,703,496

HYDROLYTIC STABILIZER OF PHOSPHITE ESTERS AND USE AS EPOXY RESIN STABILIZER

James J. Hodan, Williamsville, and William L. Schall, Buffalo, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Original application Oct. 20, 1967, Ser. No. 676,709, now Patent No. 3,553,298. Divided and this application Aug. 3, 1970, Ser. No. 67,655

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 EC **11 Claims**

This invention is directed to a novel phosphite ester composition containing particular nitrogen-containing compounds which stabilizes the phosphite ester against hydrolysis and remains in solution, relates to novel epoxy resin compositions containing the stabilized phosphite ester composition, and relates to the stabilizing use.

3,703,497

OXIMES AS ACCELERATORS FOR THE AMINE CURING OF EPOXY RESINS

Donald Dante Carlos, Louisville, and David Alan Shimp, Lyndon, Ky., assignors to Celanese Coatings Company, New York, N.Y.

No Drawing. Filed Feb. 24, 1971, Ser. No. 118,568

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 EN **9 Claims**

The curing of glycidyl ethers by aliphatic amines is accelerated by oximes, giving cured resins having little or no color derived from the accelerator.

3,703,498

POLYURETHANE MILLABLE GUMS BASED ON POLYESTERS HAVING UNSATURATION IN BOTH THE ACID AND ALCOHOL PORTIONS

Thomas G. Harris, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

No Drawing. Continuation-in-part of application Ser. No. 99,709, Dec. 18, 1970. This application Aug. 16, 1971, Ser. No. 172,328

Int. Cl. C08g *17/10, 22/10*

U.S. Cl. 260—75 NK **12 Claims**

Unsaturated polyester resins prepared by reacting tetrahydrophthalic anhydride or endic anhydride; optionally, an aromatic dicarboxylic acid or its equivalent; a diol having an allyl unsaturated group pendant from the diol chain; a polyoxyalkylene diol; and, optionally, an alkylene diol. The resins are chain-extended with diisocyanate to provide a polyurethane millable gum which may be cured by either a peroxide or sulfur cure to give elastomers of improved physical properties.

3,703,499

FUSIBLE THERMOSETTING POWDER RESIN AND PRODUCTION THEREOF

Martin K. Lindemann, 102 Independence Drive, Greenville, S.C. 29607

No Drawing. Filed Jan. 28, 1971, Ser. No. 110,768

Int. Cl. C08g *22/20*

U.S. Cl. 260—77.5 AT **13 Claims**

Thermoplastic resin powder containing active hydrogen is mulled with a stoichiometric deficiency of liquid alkoxy monoisocyanate. This consumes the active hydrogen atoms at the surface of the powder, generating alkoxy groups at the surface surrounding a core containing unreacted active hydrogen atoms. When the powder is fused, the active hydrogen atoms remaining in the core mix with the alkoxy groups generated at the surface to induce a rapid thermosetting action after significant fusion has been completed.

3,703,500

VULCANIZATION RETARDERS OF TRIHALO-SULPHENYL-SULPHONAMIDES

Roland Nast, Dormagen, Engelbert Kühle, Bergisch Gladbach, and Manfred Abele, Porz, Germany, assignors to Farbenfabriken Bayer Aktiengessellschaft, Leverkusen, Germany

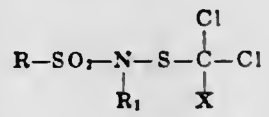
No Drawing. Filed Oct. 20, 1970, Ser. No. 82,493

Claims priority, application Germany, Nov. 15, 1969, P 19 57 484.6

Int. Cl. C08f *27/06;* **C08c** *11/54*

U.S. Cl. 260—79.5 B **11 Claims**

Compounds of the formula



$$R{-}SO_2{-}\underset{R_1}{\underset{|}{N}}{-}S{-}\overset{Cl}{\overset{|}{\underset{X}{\underset{|}{C}}}}{-}Cl$$

in which

R represents an alkyl radical optionally substituted by chlorine, a cycloalkyl radical, an aryl radical optionally substituted by at least one alkyl group and/or chlorine atom, an aralkyl radical or a dialkylamino group,
R_1 represents an aryl radical optionally substituted by at least one alkyl group and/or chlorine atom, and
X represents chlorine or fluorine

are used as vulcanization retarders in natural and/or synthetic rubber mixtures. One of these vulcanization retarders of the aforementioned general formula is N-phenyl - N - (trichloromethylsulphenyl) - methylsulphonamide.

3,703,501
VINYLNORBORNENE/MALEIC ANHYDRIDE COPOLYMERS AND PROCESS OF PREPARING SAME
Roger L. McCartney, Louisville, Ky., assignor to Celanese Coatings Company, New York, N.Y.
No Drawing. Filed Aug. 12, 1971, Ser. No. 171,317
Int. Cl. C08f *19/00*
U.S. Cl. 260—78.5 R **21 Claims**

Unsaturated polyanhydrides, useful as curing agents for epoxy resins, are prepared by the free radical addition polymerization of vinylnorbornene and maleic anhydride, and up to about 50 weight percent of other monomers if desired.

3,703,502
PROCESS FOR ISOLATING ORGANIC COMPOUNDS DISSOLVED IN AN ORGANIC SOLVENT
Dirk J. Venderbos and Laurentius L. van Dierendonck, Geleen, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands
Continuation of application Ser. No. 803,262, Feb. 28, 1969. This application Aug. 21, 1970, Ser. No. 66,102
Claims priority, application Netherlands, Feb. 28, 1968, 6802774
Int. Cl. C08f *47/22, 47/00*
U.S. Cl. 260—80.78 **5 Claims**

There is provided a process for isolating organic compounds, including polymers or copolymers from an organic solution thereof. The organic solution is introduced into a vortex chamber at a point adjacent to the periphery of the cylindrical side wall of the vortex chamber wherein it is brought in contact with a vortex flow of water of a temperature near the boiling point of the solvent under the prevailing pressure. The organic solution of which the specific gravity has to be lower than that of water is dispersed in the water phase at a point away from the interface between the liquid and the hollow core in the vortex flow. To increase the specific gravity, dissolved salts or suspended substances may be added to the water phase. The organic solution may be added to the water immediately before it enters the vortex flow or may be supplied through an axially or radially disposed feed pipe to the water phase of the vortex flow.

3,703,503
THIOUREA PSEUDOCUMENE ADDUCT
Philmore M. Scudder, Havertown, Pa., assignor to Sun Oil Company, Philadelphia, Pa.
No Drawing. Filed Aug. 13, 1969, Ser. No. 849,878
Int. Cl. C07b *21/00*
U.S. Cl. 260—96.5 T **7 Claims**

Pseudocumene (1,2,4-trimethylbenzene) will form a stable adduct with thiourea. This phenomena can be used to separate pseudocumene from a mixture of C_9 benzenoid hydrocarbons containing more than 88 weight percent of pseudocumene.

3,703,504
PROCESS FOR PRODUCING SULFURIZED OLEFINS
Andrew G. Horodysky, Beaumont, Tex., assignor to Mobil Oil Corporation
No Drawing. Filed Jan. 12, 1970, Ser. No. 2,349
Int. Cl. C07c *161/00*
U.S. Cl. 260—139 **14 Claims**

Olefins (e.g., isobutylene) are reacted with sulfur monochloride in the presence of a catalytic amount of methanol to form a sulfochlorinated intermediate product which is then reacted in the presence of a relatively large amount of isopropanol with an aqueous solution of sodium monosulfide derived from spent caustic soda liquors of petroleum refinery origin in producing a noncorrosive sulfurized organic product of unusually high sulfur content. The sulfurizing and dechlorinating reactant for the second stage of the process is prepared from the spent effluents (sulfurized aqueous sodium hydroxide solutions) from various hydrocarbon purification operations by preliminary treatment with hydrogen sulfide for separation of organic components and predominant or full conversion of the sodium compounds to sodium hydrosulfide followed by the addition of sodium hydroxide to the hydrosulfide solution to produce the sodium monosulfide reactant.

3,703,505
PREPARATION OF SULFURIZED OLEFINS
Andrew G. Horodysky and William Jaggers, Beaumont, Tex., assignors to Mobil Oil Corporation
No Drawing. Filed Aug. 31, 1970, Ser. No. 68,467
Int. Cl. C07c *149/00*
U.S. Cl. 260—139 **10 Claims**

In preparing organic sulfides by reacting olefins (e.g., butylenes) with a sulfur halide to form a sulfohalogenated intermediate which is subsequently sulfurized and dehalogenated by reaction with an aqueous solution of an alkali metal sulfide compound to form a noncorrosive organic sulfide product of high sulfur content, blackening of both the intermediate and the final product is prevented by incorporating a small amount of a base (e.g., formamide) either in the sulfohalogenation reaction mixture or shortly thereafter in the intermediate prior to the sulfurization-dehalogenation reaction.

3,703,506
ANTIBIOTICS OF AGRICULTURAL FUNGICIDES, POLYOXINS D, E, F, G AND H
Saburo Suzuki, 4–17 Hagiyama Murayama-shi; Kiyoshi Isono, N7–14, 2–17 Kirigaoka, Kita-ku; and Junsaku Nagatsu, 62–28 Kunitachi, Higashi-ku, all of Tokyo, Japan
Continuation-in-part of application Ser. No. 643,275, June 2, 1967. This application Sept. 3, 1968, Ser. No. 757,010
Claims priority, application Japan, June 6, 1966, 41/36,439; July 19, 1966, 41/47,193
Int. Cl. C07d *51/52*
U.S. Cl. 260—211.5 R **5 Claims**

Polyoxins D, E, F, G and H are each a novel antibiotic to be used as an agricultural fungicide for the protection of plants.

Said polyoxins are prepared by collecting polyoxin complex containing said polyoxins from a culture medium in which has been cultivated a strain of *Streptomyces cacaoi* var. *asoensis* that is on deposit with the American Type Culture Collection (ATCC) as ATCC access numbers 19093 and 19094, and then separating said complex into each of said polyoxins.

3,703,507
PROCESS FOR THE PRODUCTION OF 9-(β-D-ARABINOFURANOSYL) ADENINE, 5′-PHOSPHATE AND SALTS THEREOF
Theodore H. Haskell, Ann Arbor, and Donald R. Watson, Pinckney, Mich., assignors to Parke, Davis & Company, Detroit, Mich.
No Drawing. Filed Sept. 26, 1969, Ser. No. 861,485
Int. Cl. C07d *51/54*
U.S. Cl. 260—211.5 R **4 Claims**

Process for the production of 9-β-D-arabinofuranosyl) adenine, 5′-phosphate and salts thereof by reacting 9-(β-D-arabinofuranosyl)adenine with phosphorus oxychloride in glacial acetic acid in the presence of a tertiary amine base at a temperature between about 0 and about 25° C. for a period that may vary from about 2 to about 20 hours.

3,703,508
PER(HALO-OXYGEN) ACID OXIDATION, PURIFICATION AND RECOVERY PROCESS AND APPARATUS THEREFOR
Allyn Harold Heit, Mount Holly, and James Norris Williamson, Marlton, N.J., assignors to Sybron Corporation, Rochester, N.Y.
Original application Apr. 8, 1968, Ser. No. 719,361, now Patent No. 3,607,694, dated Sept. 21, 1971. Divided and this application Oct. 7, 1970, Ser. No. 78,992
Int. Cl. C08b *15/00*
U.S. Cl. 260—212 **1 Claim**

An electrodialytic apparatus utilizing anion and cation permselective membranes and having at least one two-chamber cell for purification and at least one three-chamber cell proximal the two-chamber unit for concentration of aqueous per(halo-oxygen) acids and their salts, all anolyte chambers sharing a common anolyte stream, all catholyte chambers sharing a common catholyte stream, and at least one of the anolyte chambers of the purification and the concentration cells sharing a common anode. A multi-step process for recovering and regenerating the periodate oxidant used in preparing oxidized polysaccharides in which the primary liquor and subsequent wash liquors from the oxidized polysaccharide filter cake are circulated in the anolyte and middle chambers of the electrodialytic apparatus having two-chamber and three-chamber cells for re-oxidation and concentration respectively, the liquors having a concentration of 4 to 15 weight percent being circulated in the anolyte chambers; those liquors having a concentration of 0.5 to 5 weight percent being circulated in the middle chamber, all liquors and effluents having a concentration of less than 0.5 weight percent being passed through a strong base anion exchange resin which removes the remaining periodate or chemically reduced periodates, which are subsequently eluted by the sodium hydroxide catholyte, which in turn is circulated in the anolyte chambers of the apparatus for regeneration.

3,703,509
UNSYMMETRICAL AZIRIDINYL COMPOUNDS
Andrew Oroszlan, Elmhurst, and Giuliana C. Tesoro, Dobbs Ferry, N.Y., assignors to J. P. Stevens & Co., Inc., New York, N.Y.
No Drawing. Original application Jan. 8, 1962, Ser. No. 165,017, now Patent No. 3,419,566, dated Dec. 31, 1968. Divided and this application Dec. 26, 1968, Ser. No. 810,880
Int. Cl. C07d *23/02, 23/06*
U.S. Cl. 260—239 E **2 Claims**

Unsymmetrical aziridinyl compounds and their use as cross-linking agents for active hydrogen containing polymers in a stepwise reaction.

3,703,510
1-CARBOXYALKYL OR 1-CARBOXYALKENYL-1,4-BENZODIAZEPIN-2-ONES
James Valentine Earley, 40 Daniel Drive, Cedar Grove, N.J. 07009; Rodney Ian Fryer, 5 Eton Drive, North Caldwell, N.J. 07006; and Leo Henryk Sternbach, 10 Woodmont Road, Upper Montclair, N.J. 07043
No Drawing. Continuation-in-part of application Ser. No. 836,226, June 23, 1969. This application June 1, 1970, Ser. No. 42,532
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 D **18 Claims**

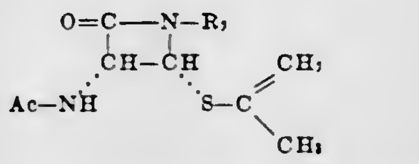
1-carboxyalkyl or 1-carboxyalkenyl-1,4-benzodiazepin-2-ones are disclosed. These benzodiazepine derivatives and their pharmaceutically acceptable salts are useful as anticonvulsants, sedatives and muscle relaxants. These compounds, particularly their basic salts, form stable aqueous solutions and thus are especially advantageous in that they are amenable to formulations suitable for injection.

3,703,511
α-AMINOBENZYL PENICILLINS
Charles Riffkin, Highland Park, Carl B. Rifino, East Brunswick, and Gilman N. Cyr, Piscataway, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.
No Drawing. Filed June 6, 1969, Ser. No. 831,225
Int. Cl. C07d *91/16*
U.S. Cl. 260—239.1 **3 Claims**

Ampicillin trihydrate having a particle size range from about 5 microns to about 50 microns may be used to form suspensions which are stable, non-irritating, longer-acting, and may be administered in more highly concentrated form.

3,703,512
ISOPROPENYLMERCAPTO-3-ALPHA-ACYLAMINO-AZETIDIN-4-ONES
Karl Heusler, Basel, Switzerland, and Robert Burns Woodward, Cambridge, Mass., assignors to Ciba-Geigy Corporation, Summit, N.J.
No Drawing. Filed July 15, 1969, Ser. No. 842,024
Claims priority, application Switzerland, July 23, 1968, 10,998/68; Dec. 11, 1968, 18,500/68, 18,509/68
Int. Cl. C07d *25/02*
U.S. Cl. 260—239 A **6 Claims**

1 - R_2 - 2α - Isopropenylmercapto - 3α - N - Ac-aminoazetidin-4-ones of the formula

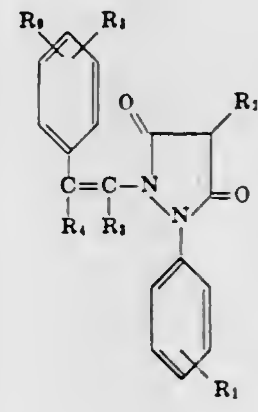


(I)

wherein R_2 reprsents a hydrogen atom or a formyl group and Ac represents the acyl radical of an organic acid, show antibacterial properties, but are primarily useful as intermediates.

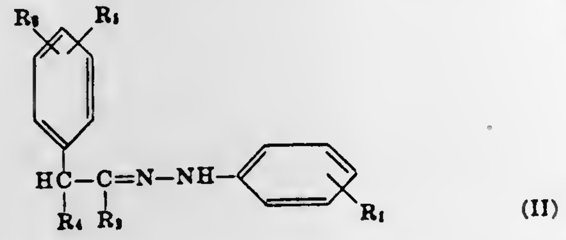
3,703,513
NOVEL 3,5-DIOXOPYRAZOLIDINE DERIVATIVES
Hisao Yamamoto and Shin-Ichi Kaneko, Nishinomiya-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan
No Drawing. Filed July 24, 1969, Ser. No. 844,610
Claims priority, application Japan, Aug. 2, 1968, 43/55,051; Aug. 14, 1968, 43/58,154; Nov. 27, 1968, 43/87,107; Dec. 17, 1968, 43/92,820, 43/92,821
Int. Cl. C07d *49/04*
U.S. Cl. 260—240 D **3 Claims**

Novel 3,5-dioxopyrazolidine derivatives, having excellent anti-inflammatory effect and represented by the Formula I,

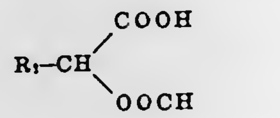


(I)

wherein R_1 signifies a hydrogen atom, a halogen atom, a nitro group, a lower alkyl group, a lower alkoxy group; R_2 signifies an alkyl group having up to 6 carbon atoms; R_3 and R_4 each signifies a hydrogen atom, a lower alkyl group, a phenyl group or a substituted phenyl group; R_5 and R_6 each signifies a hydrogen atom, a halogen atom, a nitro group, a lower alkyl group, a lower alkoxy group, a halogenated alkyl group or an alkylated amino group; provided that R_5 and R_6 may form an optionally 5- or 6-membered heterocyclic ring together with the adjacent phenyl group, are produced by contacting a phenylhydrazone derivative represented by the Formula II,


(II)

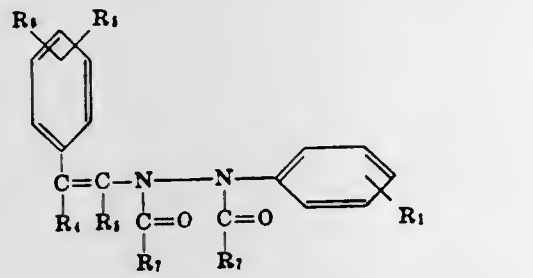
wherein R_1, R_3, R_4, R_5 and R_6 are as defined above with a malonic acid derivative represented by the Formula III,


(III)

wherein R_2 is as defined above or its reactive derivatives or reacting the phenylhydrazone derivative of the Formula II with an organic acid of the Formula IV

$$R_7COOH \quad (IV)$$

wherein R_7 represents an alkyl group having up to 3 carbon atoms, or its reactive derivative, and then contacting the resulting N^1,N^2-diacylphenylhydrazine derivative of the Formula V,

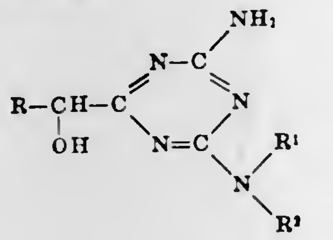

(V)

wherein R_1, R_3, R_4, R_5, R_6 and R_7 are as defined above, with a malonic acid derivative of the Formula III.

3,703,514
1,3,5-TRIAZINES

Jan Marcel Didier Aron-Samuel, 116 Rue Carnot, Suresnes, France, and Jean Jacques Sterne, 17 Boulevard Karl Marx, Argenteull, France
No Drawing. Filed Jan. 27, 1969, Ser. No. 794,845
Claims priority, application France, Feb. 8, 1968, 139,099; May 8, 1968, 150,937; Dec. 31, 1968, 182,676
Int. Cl. C07d *55/20*
U.S. Cl. 260—249.9 **3 Claims**

Triazines of formula:


(I)

wherein R is hydrogen, an alkyl radical, a methylenedioxyphenyl radical or a phenyl radical optionally mono-, di- or trisubstituted with halogen atoms, alkyl, haloalkyl or alkoxy radicals, and R^1 and R^2 are hydrogen, an alkyl, alkenyl, cycloalkyl, dialkylaminoalkyl, piperidinoalkyl or morpholinoalkyl radical, one of substituents R^1 and R^2 being other than hydrogen or an alkyl radical when the other is itself hydrogen or an alkyl radical, or R^1 and R^2, together with the nitrogen atom to which they are attached, form a heterocycle or a C-alkylsubstituted heterocycle including, as second heteroatom, a nitrogen atom which carries an alkyl, alkenyl, hydroxyalkyl, phenyl or substituted phenyl radical, and their salts, have an activity on the central nervous system.

3,703,515
2-(DIHALONITROMETHYL) QUINOXALINES

Wilson F. Gum, Jr., and Christian T. Goralski, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Dec. 2, 1970, Ser. No. 94,625
Int. Cl. C07d *51/78*
U.S. Cl. 260—250 R **9 Claims**

New 2-(dihalonitromethyl)quinoxalines are prepared by reacting a 2-(nitromethyl)quinoxaline with dilute hypochloride or hypobromite at ca. room temperature. The 2-(nitromethyl)quinoxaline reactant may have methyl-, methoxyl-, ethyl-, ethoxyl-, trifluoromethyl-, carboxylate-, or halo-substitution in the 6- and 7-positions in the carbocyclic ring. The compounds have antimicrobial activity and are useful as germicides.

3,703,516
7-ALKYL-2,5-DISUBSTITUTED-7H-PYRROLO[2,3-d] PYRIMIDINE-6-CARBONITRILES

Dong H. Kim, Wayne, and Arthur A. Santilli, Havertown, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Original application Aug. 14, 1968, Ser. No. 752,486, now Patent No. 3,575,977, dated Apr. 20, 1971. Divided and this application July 15, 1970, Ser. No. 55,239
Int. Cl. C07d *51/46*
U.S. Cl. 260—256.5 R **2 Claims**

The disclosure is directed to 7-alkyl-2,5,6-trisubstituted 7H-pyrrolo[2,3-*d*]pyrimidines and to the 4 - [(cyanomethyl)alkylamino] - 2 - substituted - 5 - pyrimidine carboxylic acid esters which are intermediates in their production. The compounds have central nervous system activity as depressants. A representative compound is 7-methyl - 2 - phenyl - 5 - (p-tolylsulfonyl)-7H-pyrrolo-[2,3-*d*]pyrimidine-6-carbonitrile.

3,703,517
4-[(CARBOXYALKYL)AMINO]-5-PYRIMIDINE-CARBOXYLIC ACID ESTERS

Dong H. Kim, Wayne, and Arthur A. Santilli, Havertown, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Original application Aug. 14, 1968, Ser. No. 752,487, now Patent No. 3,641,028, dated Feb. 8, 1972. Divided and this application May 14, 1971, Ser. No. 143,612
Int. Cl. C07d *51/42*
U.S. Cl. 260—256.4 N **2 Claims**

The disclosure is directed to 5 - hydroxy - 7H-pyrrolo [2,3-*d*]pyrimidine-6-carboxylic acid esters and to 4-[(carboxyalkyl)amino]-5-pyrimidinecarboxylic acid esters. All these compounds have central nervous system activity as depressants while the latter compounds may also be used in the preparation of the former compounds.

3,703,518
METHOD FOR PRODUCING β-AMINO-CROTONAMIDE

Takeshi Inoi, Yokohama-shi, Koji Sueyoshi, Minamata-shi, Masahiro Fujii, Kawasaki-shi, Kenjiro Shoji, Yokohama-shi, and Akio Shudo, Takayoshi Yoshizaki, and Yutaka Matsuo, Minamata-shi, Japan, assignors to Chisso Corporation, Osaka, Japan
No Drawing. Filed July 15, 1970, Ser. No. 55,214
Claims priority, application Japan, July 28, 1969, 44/59,502; May 7, 1970, 45/38,828
Int. Cl. C07c *103/00*
U.S. Cl. 260—561 N **15 Claims**

β-Aminocrotonamide having a high purity can be produced with a good yield by a simple process by reacting diketene with ammonia in the presence or in the absence of a specified solvent, cooling the resultant reaction mixture containing an oily reaction product, in the presence of said solvent, uniformly under stirring, followed by a crystallization treatment to precipitate crystals of β-aminocrotonamide and separating and recovering the resultant crystals. The yield is further improved to a quantitative value by introducing the reactants simultaneously into said solvent and further by adopting a molar ratio of one mol of diketene to two or more mols of ammonia in the reaction.

3,703,519
PIPERAZINIUM MONO(ACETYLSALICYLATE)

Edward Henderson, 200 Central Park S.,
New York, N.Y. 10019
No Drawing. Filed July 15, 1970, Ser. No. 55,269
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 R **1 Claim**

Piperazinium mono(acetylsalicylate), useful for its analgesic, anti-pyretic, and anti-inflammatory effects, and the method of making it by admixture of ether solutions of acetylsalicylic acid and piperazine.

3,703,520
ADDUCTS OF ETHYLENE CARBONATE AND TRIETHYLENEDIAMINE

Peter S. Carleton, Branford, and William J. Farrissey, Jr., North Branford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Filed Oct. 6, 1970, Ser. No. 78,567
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 T **3 Claims**

Novel catalytic compositions are disclosed which are the monohydrate and unhydrated adducts respectively of substantially equimolar proportions of ethylene carbonate and triethylenediamine. The adducts are useful organic isocyanate trimerization catalysts.

3,703,521
METHOD FOR THE PREPARATION OF STABLE 4-FLUOROPYRIDINE SALTS

Max M. Boudakian, Pittsford, N.Y., assignor to Olin Corporation
No Drawing. Filed Mar. 22, 1971, Ser. No. 127,039
Int. Cl. C07d *31/26*
U.S. Cl. 260—290 HL **9 Claims**

This invention relates to a novel integrated route to selected stable salt adducts of 4-fluoropyridine and substituted 4-fluoropyridines in high yield by the diazotization and fluorination of selected 4-aminopyridines to form the respective 4-fluoropyridine followed by combination with the desired stabilizer in an organic medium to form the respective 4-fluoropyridine salt.

3,703,522
CARBOSTYRIL DERIVATIVES

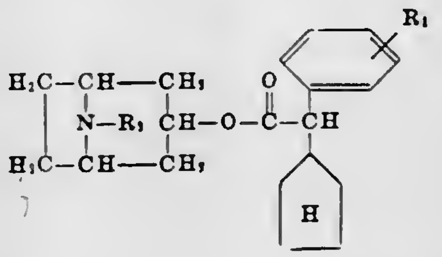
Janis Plostnieks, Philadelphia, Pa., assignor to McNeil Laboratories, Inc.
No Drawing. Original application Mar. 30, 1967, Ser. No. 626,982, now Patent No. 3,575,984. Divided and this application Mar. 27, 1970, Ser. No. 24,471
Int. Cl. C07d *33/52*
U.S. Cl. 260—288 R **3 Claims**

The compounds herein are 3,4-dihydro-4-methyl-4-phenyl-6-chloro-carbostyril derivatives, useful for their various pharmacological activities, such as anti-inflammatory, hypotensive and central nervous system depressant activities. Also included herein is 4′-chloro-β-methylcinnamanilide, useful in the synthesis of the subject carbostyrils.

3,703,523
TROPANOL ESTERS OF ALPHA-PHENYL-ALPHA-CYCLOPENTYL-ACETIC ACID

Gerhard Walther, Ingelheim am Rhein, Rudolf Bauer, Wiesbaden, and Werner Schulz and Walther Sirrenberg, Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany
No Drawing. Filed May 26, 1971, Ser. No. 147,206
Claims priority, application Germany, June 1, 1970, P 20 26 661.9
Int. Cl. C07d *43/06*
U.S. Cl. 260—292 **6 Claims**

A racemate of a compound of the formula



wherein

R_1 is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or halogen, and
R_2 is hydrogen, alkyl of 2 to 5 carbon atoms, cycloalkyl of 3 to 6 carbon atoms or, when R_1 is other than hydrogen, also methyl,

optically active components of said racemates, quaternary ammonium salts of said racemates or optically active components, and non-toxic acid addition salts of said racemates or optically active components; the compounds and their salts are useful as anticholinergics.

3,703,524
2-AROYL-3-AMINOALKOXY INDOLES

Arne Elof Braendstroem, Goteborg, and Stig Ake Ingemar Carlsson, Moelnlycke, Sweden, and Andre Gagneux, Basel, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.
No Drawing. Continuation of application Ser. No. 699,289, Jan. 22, 1968. This application Mar. 26, 1970, Ser. No. 23,047
Claims priority, application Switzerland, Jan. 25, 1967, 1,131/67
The portion of the term of the patent subsequent to Apr. 28, 1988, has been disclaimed
Int. Cl. C07d *29/26*
U.S. Cl. 260—293.61 **8 Claims**

The compounds are of the class of indole derivatives, more particularly indole derivatives substituted in 2- and 3-positions and acid addition salts thereof. The compounds are useful as analgesic, anti-inflammatory, antitussive, tranquilizing, anti-allergic and anaesthesia-potentiating agents. An illustrative embodiment is 2-benzoyl-3-(2-pyrrolidinoethoxy)indole.

3,703,525

TRIAZOLO[1,5-a][1,4]BENZODIAZEPINE DERIVATIVES

Hiroyuki Tawada, Kyoto, and Kanji Meguro and Yutaka Kuwada, Hyogo, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

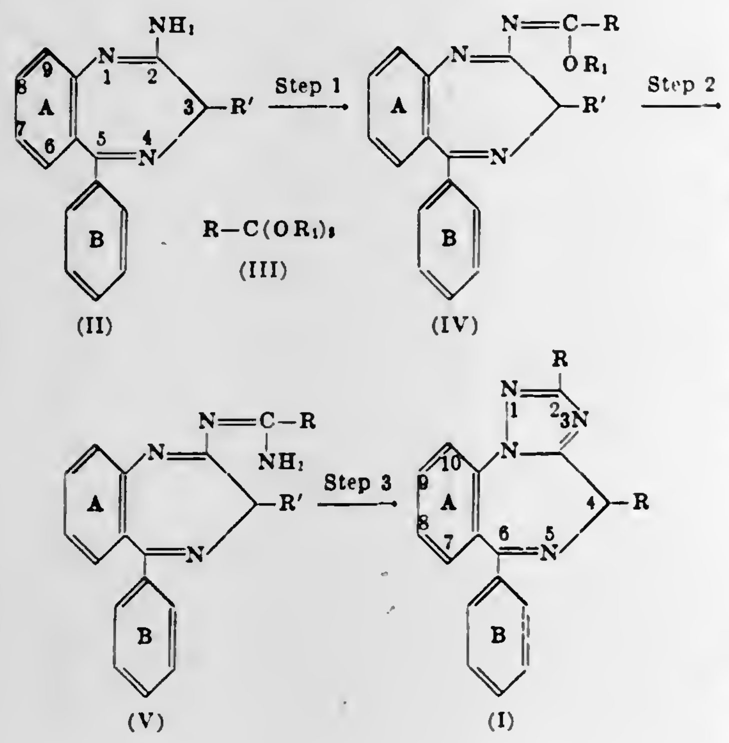
No Drawing. Filed Nov. 16, 1970, Ser. No. 90,139

Claims priority, application Japan, Nov. 15, 1969, 44/91,720

Int. Cl. C07d *53/06, 57/02*

U.S. Cl. 260—308 R **9 Claims**

s-Triazolo [1,5-a][1,4] benzodiazepine derivatives are produced by the following process:



Compounds I, IV and V, 4 or 5 N-oxides thereof and acid salts thereof are active central nervous system agents.

3,703,526

NOVEL 3-(3,5-DICHLOROPHENYL)OXAZOLIDINE-2,4-DIONE DERIVATIVES

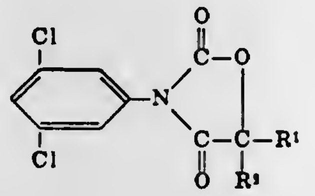
Katsumi Sato and Takashi Nakamura, Hiratsuka, Masaru Nakamura, Atsuki, Kazuo Hirasawa, Fuchun, Matsuo Hamada, Yokohama, Kenzi Takahashi, Hiratsuka, Masaaki Yashima, Atsuki, Toshiaki Ozaki and Sigeo Yamamoto, Toyonaka, Tadashi Ooishi, Minoo, Akira Fujinami, Ashiya, Fukashi Horiuchi, Takatsuki, and Katsuji Nodera, Nishinomiya, Japan, assignors to Sumitomo Chemical Co., Ltd., and Hokko Chemical Industry Co., Ltd.

No Drawing. Continuation-in-part of abandoned application Ser. No. 779,277, Nov. 26, 1968. This application Nov. 16, 1970, Ser. No. 90,160

Int. Cl. C07d *85/34*

U.S. Cl. 260—307 B **4 Claims**

An oxazolidinedione of the formula:



wherein R^1 and R^2 are each a hydrogen atom or a lower alkyl group, is prepared by reacting 3,5-dichlorophenyl isocyanate with alkyl α-hydroxyalkanoate in the presence of a tertiary organic amine or alternatively reacting 3,5-dichloroaniline, dialkyl carbonate anda lkyl α-hydroxyalkanoate in the presence of an alkali metal alkoxide. The oxazolidinedione is useful as an anti-fungal agent against a variety of phytopathogenic fungi.

3,703,527

PREPARATION OF MANNICH-BASES

Gabriel Saucy, Essex Fells, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of application Ser. No. 679,989, Nov. 2, 1967, now Patent No. 3,544,598, which is a continuation-in-part of application Ser. No. 633,730, Apr. 26, 1967, now abandoned, which is a continuation-in-part of application Ser. No. 604,124, Dec. 23, 1966, now abandoned, which in turn is a continuation-in-part of application Ser. No. 549,816, May 13, 1966, now abandoned. This application June 4, 1969, Ser. No. 830,491

Int. Cl. C07d *85/22*

U.S. Cl. 260—307 **13 Claims**

Mannich-bases are prepared by the reaction of vinyl carbinols with manganese dioxide in the presence of primary or secondary amines. In preferred embodiments γ, δ or ε hydroxy vinyl carbinols are reacted with manganese dioxide in the presence of a secondary amine, e.g., diethylamine to form Mannich bases which are useful as intermediates in the total synthesis of steroids having valuable pharmacological properties.

3,703,528

1,2-DIPHENYL-3,5-DIOXO-4-SUBSTITUTED PYRAZOLIDINES

Silvano Casadio and Gianfranco Pala, Milan, Italy, assignors to Istituto de Angeli S.p.A., Milan, Italy

No Drawing. Filed June 12, 1970, Ser. No. 45,891

Claims priority, application Great Britain, June 27, 1969, 32,698/69

Int. Cl. C07d *49/08*

U.S. Cl. 260—310 B **2 Claims**

1,2-diphenyl-3,5-dioxopyrazolidines having a 3-methyl-2-butenyl or 4-methyl-3-pentenyl group at the 4-position. These compounds have anti-inflammatory and analgesic activity of the order of phenylbutazone, but markedly less ulcerogenic activity.

3,703,529

NITROGEN-CONTAINING TRICYCLIC COMPOUNDS

John Frederick Cavalla, Isleworth, Roy Simpson, Slough, and Alan Chapman White, Windsor, England, assignors to John Wyeth & Brother Limited, Taplow, Maidenhead, England

No Drawing. Filed Mar. 26, 1970, Ser. No. 23,055

Claims priority, application Great Britain, Mar. 31, 1969, 16,670/69

Int. Cl. C07d *27/30*

U.S. Cl. 260—326.5 B **10 Claims**

A new group of substituted indeno-[2,1-b]pyrroles useful as analgesic or anti-inflammatory agents is described. These compounds are optionally substituted at the 3a-position by lower alkyl radicals, optionally substituted at the 1-position by lower alkyl, lower alkenyl, lower alkynyl, aryl lower alkyl, cycloalkyl lower alkyl, tertiary amino lower alkyl or acyl radicals, optionally substituted at the 4-, 5-, 6- or 7-positions by lower alkoxy or hydroxyl radicals, optionally substituted at the 2-position by an oxygen atom and optionally substituted at the 8-position by an oxygen atom, or a hydroxyl or acyloxy radical.

3,703,530

ALKYL - 2 - ALKYL - 2,3 - DICARBOXY-5-NORBORNENE - 7-ACETATE INTERMEDIATES FOR THE TOTAL SYNTHESIS OF ELENOLIC ACIDS AND ANALOGS THEREOF

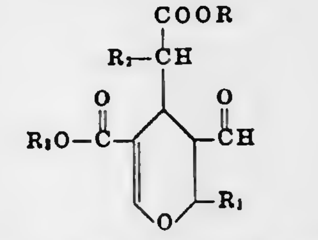
Robert C. Kelly, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Aug. 24, 1970, Ser. No. 66,557

Int. Cl. C07c *61/18*

U.S. Cl. 260—346.6 **4 Claims**

A total synthesis of elenolic acid, Formula XIV (R and R_2 are hydrogen, R_1 and R_3 are methyl) and the analogs thereof, of Formula XIV:



XIV

wherein R and R_3 are alkyl of 1 to 8 carbon atoms, inclusive, wherein R_1 is alkyl of 1 to 4 carbon atoms, inclusive, and wherein R_2 is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms, inclusive, is carried out by a multi-step process starting from cyclopentadiene. Compounds of Formula XIV have virucidal and hypotensive activity and can be used as hypotensive agents in mammals (U.S. Pat. 3,033,877) or as virucidal agents to decontaminate surgical instruments, hospital walls, swimming pools, or can be used for nasal washes in mammals.

3,703,531

MANUFACTURE OF BASIC NITROGEN AND HYDROXYL CONTAINING EPOXIDE RESINS

Martin Cherubim, Rheinkampeick, Horst Giehring, Hamburg, and Wilhelm Neier, Homberg, Germany, assignors to Deutsche Texaco Aktiengesellschaft (formerly Rhienpreussen A.G.), Mittelweg, Germany

No Drawing. Filed May 12, 1971, Ser. No. 142,812

Claims priority, application Germany, May 14, 1970, P 20 23 571.6

Int. Cl. C07d *1/04*

U.S. Cl. 260—348.6 **2 Claims**

Method of producing light colored basic nitrogen and hydroxyl containing epoxide resins having an epoxide equivalent of from 90 to 1500 comprising first contacting an alkyl primary amine of from 1 to 6 carbons with epichlorohydrin in the presence of di-secondary-butylether and second contacting the formed chlorohydrin intermediate with an alkali metal hydroxide in the presence of di-secondary-butylether and/or methyl ethyl ketone.

3,703,532

PHOSPHORUS CONTAINING COUMARINS

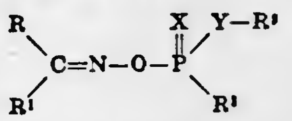
Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Apr. 6, 1970, Ser. No. 26,150, now Patent No. 3,631,170. Divided and this application Jan. 11, 1971, Ser. No. 105,615

Int. Cl. C07d *7/26*

U.S. Cl. 260—343.2 R **3 Claims**

Compounds having the formula:



in which X is oxygen or sulfur; Y is oxygen or sulfur; R is alkyl; R^1 is alkyl; R^2 is alkyl or alkoxy and R^3 is a heterocyclic group, and their use as insecticides and acaricides are disclosed.

3,703,533

PROCESS FOR THE MANUFACTURE OF 1,4-DIHALOGENANTHRAQUINONES

Maurice Grelat, Bettingen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Continuation-in-part of application Ser. No. 724,615, Apr. 26, 1968. This application May 25, 1971, Ser. No. 146,851

Claims priority, application Switzerland, June 12, 1967, 8,268/67

Int. Cl. C09b *1/00*

U.S. Cl. 260—384 **10 Claims**

A process for the manufacture of 1,4-dihalogenanthraquinones, wherein leucoquinizarine is treated in a first stage with a halogenating agent until six halogen atoms have been absorbed into the molecule, and the hexahalogeno derivative thus obtained is hydrolyzed in a second stage.

3,703,534

19-NORTESTOSTERONE ESTERS

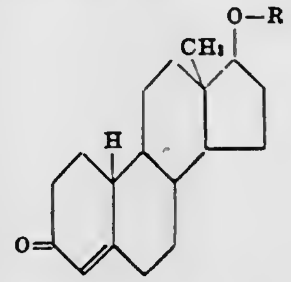
Silvano Casadio and Gianfranco Pala, Milan, Italy, assignors to Istituto de Angeli S.p.A., Milan, Italy

No Drawing. Filed Nov. 25, 1970, Ser. No. 92,847

Int. Cl. C07c *169/22*

U.S. Cl. 260—397.4 **5 Claims**

There are provided novel esters of 19-nortestosterone having valuable anabolic activity. The esters have the general formula



in which R represents the acyl radical of an acid selected from the group consisting of terpenic, homoterpenic and terpenylacetic acids, said acid being derived from a terpene selected from the group consisting of α,β-saturated mono- and sesqui-terpenes containing 1–3 2-methyl-but-2-ene units.

3,703,535

DIAMIDO AMINO SULFONATES AND METHODS FOR PREPARING SAME

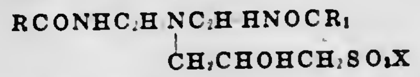
Hans S. Mannheimer, 23 Haines Cove Drive, Toms River, N.J. 08753

No Drawing. Filed Apr. 30, 1971, Ser. No. 139,279

Int. Cl. C07c *143/90*

U.S. Cl. 260—401 **9 Claims**

Novel compounds of the formula:



$$\begin{array}{l}RCONHC_2H_4\underset{|}{N}C_2H_4HNOCR_1\\ \qquad\qquad\quad CH_2CHOHCH_2SO_3X\end{array}$$

wherein R and R_1 are hydrocarbon radicals; X is an alkali metal, or equivalent cation. They are produced by reacting hydroxy propane sultone with certain diamido derivatives of diethylene triamine.

3,703,536

PREPARATION OF OIL-SOLUBLE BORON DERIVATIVES OF AN ALKYLENE POLYAMINE-SUBSTITUTED PHENOL-FORMALDEHYDE ADDITION PRODUCT

Edmund J. Piasek, Chicago, Ill., Robert E. Karll, Munster, Ind., and Richard J. Lee, Park Forest, Ill., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Nov. 24, 1967, Ser. No. 685,254

Int. Cl. C07f *5/04*

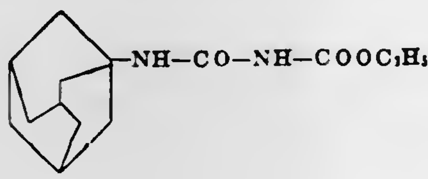
U.S. Cl. 260—462 R **4 Claims**

Complex substituted alkylene polyamines such as di (alkenylsuccinimide) of N_1,N_3 symmetrical bis(amino-polyazalkylene) ureas and oil-soluble products derived by the reaction of p-alkylphenols, formaldehyde and alkylene polyamines that react with boric acid in oil solution either with low boric acid utilization efficiency or react to form a hazy product whose haze cannot be removed by filtration are readily converted to the desired oil solution of boron and nitrogen containing products by first preparing an oil solution of super boron containing product of the complex substituted alkylene polyamine, combining the oil solution of super boron containing product with oil solution of the complex substituted alkylene polyamine and equilibrating the resulting mixture to a uniform boron to nitrogen content throughout.

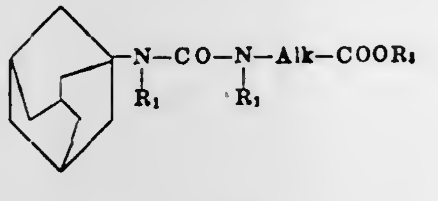
3,703,537
ADAMANTYL UREA DERIVATIVES

Carl Richter, Kurt Pluss, and Georg Feth, Schaffhausen, Switzerland, assignors to Cilag-Chemie, A.G.
No Drawing. Filed Oct. 28, 1969, Ser. No. 874,084
Int. Cl. C07c *127/16, 127/18, 127/20*
U.S. Cl. 260—468 B **11 Claims**

Compounds useful as antiviral agents defined by the formulas:



and



wherein Alk is alkylene, R_1 and R_2 are each hydrogen or lower alkyl, and R_3 is hydrogen or a variously defined ester moiety.

3,703,538
PRODUCTION OF ANHYDROUS β-HYDROXYALKYL CARBAMATES

John D. Malkemus, Austin, Tex., and John B. Bell, Wyckoff, N.J., assignors to Jefferson Chemical Company, Inc., Houston, Tex.
No Drawing. Continuation of application Ser. No. 516,144, Dec. 23, 1965. This application Feb. 3, 1969, Ser. No. 796,206
Int. Cl. C07d *125/04*
U.S. Cl. 260—482 C **7 Claims**

Anhydrous β-hydroxyalkyl carbamates are produced by reaction under substantially anhydrous conditions of a cyclic alkylene carbonate with ammonia in the presence of a β-hydroxyalkyl carbamate solvent which causes the reaction to be initiated at about atmospheric pressures.

3,703,539
PREPARATION OF ESTERS OF UNSATURATED MONOCARBOXYLIC ACIDS

Bart A. Di Liddo, Seven Hills, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Continuation of abandoned application Ser. No. 627,476, Mar. 31, 1967. This application Apr. 7, 1971, Ser. No. 132,154
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 R **8 Claims**

A process is disclosed for preparing simple, polymerizable esters of unsaturated monocarboxylic acids by effecting release of the desired ester by means of a vacuum distillation-disproportionation of the desired ester from a complex sulfate mixture containing the novel monosulfate and disulfate ester-salts of the desired ester. The sulfate mixture is prepared by reaction under essentially anhydrous conditions of an alpha-monoolefin containing up to five carbon atoms with an unsaturated monocarboxylic acid containing up to four carbon atoms in the presence of an excess of anhydrous sulfuric acid. Ethyl acrylate may thus be prepared from ethylene, glacial acrylic acid and concentrated sulfuric acid.

3,703,540
PREPARATION OF O-ACYL-N-METHYLOL-AMIDES

Erwin Muller, Leverkusen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Apr. 20, 1970, Ser. No. 30,262
Claims priority, application Germany, May 30, 1969, P 19 27 642.7
Int. Cl. C07c *103/02, 103/60*
U.S. Cl. 260—490 **4 Claims**

Preparation of the title products and corresponding urethanes by reacting (1) a compound containing at least one group of the formula

$$—CO—NR—CH_2—OR'$$

wherein R is hydrogen, alkyl, alkenyl, cycloalkyl or together with the free valency of the carbonyl groups represents $—(CH_2)_5—$ and R′ is alkyl or alkenyl, is heated with (2) acetic anhydride or propionic anhydride at a temperature of from about 100 to about 170° C. Typical examples of (1) include N-methylol alkyl and alkenyl ethers of acrylamide and methacrylamide.

3,703,541
PROCESS FOR THE PRODUCTION OF 3-HYDROXY-2,2,4-TRIMETHYLPENTYL ISOBUTYRATE

Itaru Takasu, Oi-machi, and Takaaki Sasaki and Akira Yamamoto, Arai, Japan, assignors to Daicel Ltd., Osaka, Japan
No Drawing. Filed Apr. 16, 1970, Ser. No. 29,262
Claims priority, application Japan, Apr. 24, 1969, 44/31,857
Int. Cl. C07c *67/10*
U.S. Cl. 260—494 **4 Claims**

A process for producing 3-hydroxy-2,2,4-trimethylpentyl isobutyrate in which isobutyraldehyde is condensed by employing as a catalyst an alkali metal salt of a monohydric or polyhydric phenol which is either unsubstituted or has hydrocarbon or phenolic substituents in the aromatic nucleus thereof. The reaction is carried out at a temperature of 70°–100° C. and the catalyst concentration is in the range of from 0.3% to 5% by weight based on the weight of the aldehyde. The water content of the starting aldehyde is less than 5000 p.p.m.

3,703,542
HYDROXAMIC ACID DERIVATIVES OF 1-AMINOCYCLOHEXANECARBOXYLIC ACID

Harvey E. Alburn, West Chester, Donald E. Clark, Norristown, Norman H. Grant, Wynnewood, and Milton Lapidus, Rosemont, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Filed Nov. 5, 1969, Ser. No. 874,382
Int. Cl. C07c *103/30;* **A61k** *27/00*
U.S. Cl. 260—500.5 H **3 Claims**

The compounds are hydroxamic acids of alicyclic amino acids, and esters of said compounds, all of which have valuable pharmacodynamic properties in that they relieve hyperglycemia in warm-blooded animals.

3,703,543
HYDROXAMIC ACIDS OF ALICYCLIC AMINO ACIDS

Harvey E. Alburn, West Chester, Donald E. Clark, Norristown, Norman H. Grant, Wynnewood, and Milton Lapidus, Rosemont, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Filed Nov. 5, 1969, Ser. No. 874,381
Int. Cl. C07c *103/30;* **A61k** *27/00*
U.S. Cl. 260—500.5 H **2 Claims**

The compounds are hydroxamic acids of alicyclic amino acids, and esters of said compounds, all of which have valuable pharmacodynamic properties in that they suppress the immune response in warm-blooded animals.

3,703,544
PROCESS FOR PREPARING THE TRIS(HYDROXYMETHYL)-AMINOMETHANE SALT OF PGE_2

Walter Morozowich, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Continuation-in-part of application Ser. No. 42,458, June 1, 1970. This application May 10, 1971, Ser. No. 142,019
Int. Cl. C07c *91/02*
U.S. Cl. 260—501.17 **3 Claims**

Free flowing crystals of the tris(hydroxymethyl)aminomethane salts of PGE_2 and $PGF_{2\alpha}$, and processes for producing those, are disclosed. Those crystals are useful for the same pharmacological and medical purposes as PGE_2 and $PGF_{2\alpha}$, and are also useful as a means for purifying PGE_2 and $PGF_{2\alpha}$.

3,703,545
POLYALKYLENEPOLYAMINES WITH N-(2-HYDROXY-3-SULFOPROPYL) GROUPS

Avis L. McCrary, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed July 2, 1970, Ser. No. 52,101
Int. Cl. C07c *143/14;* **C07f** *15/02;* **A01n** *7/00*
U.S. Cl. 260—513 N **5 Claims**

Polyalkylenepolyamines wherein the amino hydrogen atoms have been replaced by carboxymethyl and 2-hydroxy-3-sulfopropyl groups are effective iron chelating agents useful for promoting plant growth. Those compounds where most of the substituents are 2-hydroxy-3-sulfopropyl groups have superior iron chelating capacity, particularly at high pH levels.

3,703,546
PREPARATION OF 3-AMINO-2,5-DICHLOROBENZOIC ACID

Joseph Michael Faraday Leaper, Lansdale, and Harvey Peter John Raman, Philadelphia, Pa., assignors to Amchem Products, Inc., Ambler, Pa.
No Drawing. Filed Oct. 24, 1968, Ser. No. 770,393
Int. Cl. C07c *101/54*
U.S. Cl. 260—518 A **3 Claims**

3-amino-2,5-dichlorobenzoic acid is prepared in high yield by chlorinating benzoylchloride and esterifying the resulting mixture, separating the desired 2,5-dichloro isomer from the mixture by freeze crystallization, nitrating and isolating 3-nitro-2,5-dichlorobenzoic acid from the mixture of nitro isomers by acid hydrolysis and treating with a reducing agent.

3,703,547
METHOD OF PREPARING PHTHALIC ACIDS

Luigi Lugo, Milan, Giorgio Gualdi, Verona, and Cesare Reni, Busto Arsizio, Varese, Italy, assignors to Societá Italiana Resine S.p.A., Milan, Italy
No Drawing. Filed June 30, 1970, Ser. No. 51,318
Claims priority, application Italy, July 7, 1969, 19,282/69
Int. Cl. C07c *63/02*
U.S. Cl. 260—524 R **5 Claims**

A process for the catalytic oxidation of p-xylene to terephthalic acid, consisting in partially oxidising the p-xylene in an initial stage of the reaction, in the presence of metallic catalysts, and completing the oxidation reaction in a second stage carried out at a lower temperature than the first, in the presence of activators consisting of organic substances containing one or more keto groups in the molecule.

3,703,548
PROCESS FOR THE PRODUCTION OF UNSATURATED ACIDS

Makoto Honda, Tokyo, and Kyugo Tanaka and Itaru Watanabe, Kanagawa, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
No Drawing. Filed Mar. 2, 1971, Ser. No. 120,342
Claims priority, application Japan, Mar. 17, 1970, 45/22,420
Int. Cl. C07c *57/04*
U.S. Cl. 260—530 N **3 Claims**

Unsaturated fatty acids, particularly acrylic acid or methacrylic acid are prepared by oxidizing unsaturated aliphatic aldehydes, particularly acrolein or methacrolein, in gaseous phase with molecular oxygen-containing gas in the presence of a catalyst of

$$Mo_aTl_bX_cO_d$$

where

X is Re, Hg, Cu, Co, V or Ga;
$a=1$;
$b=0.01–0.5$;
$c=0–1.0$; and
$d=$a number defined depending on the oxidation state of Mo and the other metallic elements, and within the range between 3.05 and 4.85.

3,703,549
PRODUCTION OF DICARBOXYLIC ACIDS

Bertram Yeomans, Hessle, England, assignor to BP Chemicals Limited, London, England
No Drawing. Filed Sept. 8, 1970, Ser. No. 70,527
Claims priority, application Great Britain, Sept. 11, 1969, 44,850/69
Int. Cl. C07c *51/00, 51/14*
U.S. Cl. 260—533 A **14 Claims**

Di-neo acids are produced by treating a mono-neo acid containing at least 10 carbon atoms and no tertiary hydrogen atoms with strong acid.

3,703,550
PROCESS FOR PREPARING UNSATURATED ALDEHYDES AND UNSATURATED CARBOXYLIC ACIDS

Mamoru Nakano and Koju Kadowaki, Amimachi, Isao Komuro, Yokkaichi, and Takeo Koshikawa and Bunzi Oshida, Amimachi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan
No Drawing. Continuation-in-part of abandoned application Ser. No. 699,307, Jan. 22, 1968. This application Dec. 29, 1970, Ser. No. 102,501
Int. Cl. C07c *51/32, 57/04*
U.S. Cl. 260—533 N **4 Claims**

In the process for preparing unsaturated compounds selected from unsaturated aldehydes and unsaturated carboxylic acids which comprises contacting an α-olefin in the vapor phase with molecular oxygen at a temperature of 250–550° C. in the presence of a solid catalyst, the improvement wherein the solid catalyst consists essentially of the elements of (i) molybdenum, (ii) tin, (iii) phosphorus, (iv) tellurium, (v) iron and (vi) oxygen, said elements (i) to (v) being present in the catalyst in an atomic ratio expressed by the following formula:

$$(Mo)_{12}(Te)_a(P)_b(Sn)_c(Fe)_d$$

wherein *a* is from 0.2 to 12, *b* is from 0.2 to 24, *c* is from 0.2 to 24, and *d* is from 0.2 to 24.

3,703,551

PROCESS FOR THE CONVERSION OF OLEFINS TO UNSATURATED ALDEHYDES AND ACIDS

Leon B. Levy, Nueces, Tex., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Filed Mar. 16, 1971, Ser. No. 124,939

Int. Cl. C07c *57/04, 47/22*

U.S. Cl. 260—533 N **7 Claims**

This disclosure relates to the oxidation of olefins to unsaturated aldehydes and unsaturated acids such as the conversion of propylene to acrolein and acrylic acid in the vapor phase and at an elevated temperature in the presence of a catalyst comprising phosphorus, molybdenum and tellurium dioxide supported with rhenium on an inert support and methods for preparation of the catalyst.

3,703,552

N-PHENYL-N'-SALICYLOYL-PHENYLENE DIAMINES

Ronald B. Spacht, 1750 Tannery Circle Road, Hudson, Ohio 44236

No Drawing. Original application Oct. 2, 1967, Ser. No. 672,028, now Patent No. 3,558,552. Divided and this application May 21, 1970, Ser. No. 48,598

Int. Cl. C07c *103/19, 103/26, 103/74*

U.S. Cl. 260—559 S **3 Claims**

Certain salicyloyl derivatives such as N-phenyl-N'-salicyloyl-p-phenylenediamine and N-phenyl-N'-3-tertiary-butyl salicyloyl-p-phenylenediamine as antioxidants for oxidizable polymers.

3,703,553

DIMERIZATION OF 2-AMINOMETHYL-1,3-BUTADIENE

Griffin D. Jones and Nancy B. Tefertiller, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Sept. 10, 1969, Ser. No. 856,839

Int. Cl. C07c *87/38*

U.S. Cl. 260—563 R **8 Claims**

The cyclic dimer of 2-aminomethyl-1,3-butadiene is formed by reacting in solution the monomer with a Brönsted acid. A free-radical scavenger, such as hydroquinone, is preferably added as a polymerization inhibitor.

The cyclic dimer is useful as an epoxy curing agent.

3,703,554

TERPENYLAMINO ETHERS AND THIOETHERS

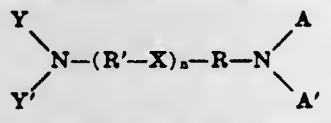
Carl Bordenca, Ponte Vedra Beach, Fla., assignor to SCM Corporation, Cleveland, Ohio

No Drawing. Filed July 22, 1969, Ser. No. 851,770

Int. Cl. C07c *87/24, 93/10*

U.S. Cl. 260—583 EE **10 Claims**

Described are a novel class of diamines of the formula:



$$\begin{matrix} Y & & & & A \\ & \diagdown & & \diagup & \\ & N-(R'-X)_n-R-N & & & \\ & \diagup & & \diagdown & \\ Y' & & & & A' \end{matrix} \qquad \text{I.}$$

where Y and Y' are terpenyl, R' and R are lower allylene, A and A' are like or dissimilar lower alkyl, X is sulfur or oxygen, and *n* is an integer of from 1 to 3. Also described are stable salts thereof.

Novel compounds and compositions containing them are advantageous in that they exhibit phytocidal activity when employed in minute quantities and are nontoxic to warm-blooded animals and man. Compounds and compositions are phytocidally effective against aquatic and terrestrial plant species and are often effective against aquatic weeds in concentrations below 1 part per million.

3,703,555

HYDROLYSIS OF IMINES AND RESULTANT PRODUCTS

Ernest A. Zuech, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Original application Jan. 29, 1965, Ser. No. 429,117, now Patent No. 3,422,142, dated Jan. 14, 1969. Divided and this application Sept. 26, 1968, Ser. No. 762,990

Int. Cl. C07c *47/20*

U.S. Cl. 260—601 R **5 Claims**

Imines are converted to higher molecular weight imines by reaction with a butadiene in the presence of an alkali metal amide. The initial imine must have at least one alpha hydrogen. The new imine will contain at least one 2-butenyl group in place of an alpha hydrogen in the original imine.

3,703.556

HALOGENATION OF HYDROXYARYL SULFONES

David S. Davis, West Orange, and Young K. Kim, Paterson, N.J., assignors to Witco Chemical Corporation, New York, N.Y.

No Drawing. Filed Nov. 14, 1969, Ser. No. 876,990

Int. Cl. C07c *147/10*

U.S. Cl. 260—607 A **5 Claims**

Brominated or chlorinated derivatives of hydroxyaryl sulfones are produced by direct halogenation of the sulfone in carboxylic acid solvent medium, said acid having from 1 to 6 carbon atoms.

3,703,557

PROCESS FOR THE PREPARATION OF TETRAFLUOROETHYLENE BY DECHLORINATION AND DIMERIZATION OF DICHLORODIFLUOROMETHANE

Martino Vecchio, Milan, Giorgi Carraro, Saronno, and Italo Cammarata, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed June 4, 1970, Ser. No. 43,578

Claims priority, application Italy, June 4, 1969, 17,737/69

Int. Cl. C07c *21/18, 17/26*

U.S. Cl. 260—653.3 **12 Claims**

A process is disclosed for the preparation of tetrafluoroethylene by the dechlorination and dimerization of dichlorodifluoromethane, wherein the reaction is carried out with an amalgam of alkali or alkaline-earth metal in a reaction medium comprising at least one organic solvent.

3,703,558

PROCESS FOR PREPARING A PURE HYDROGENATED CYCLOOLEFIN

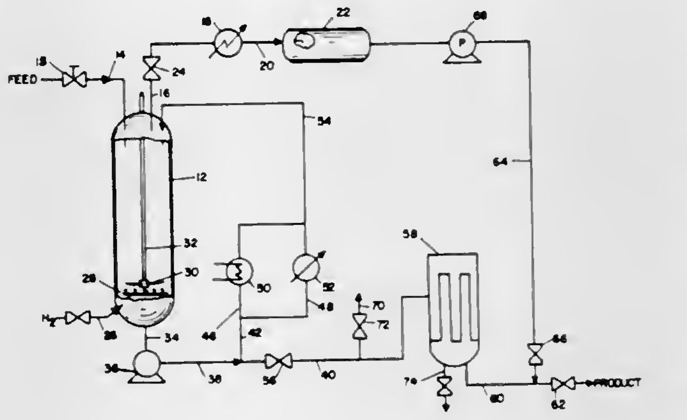
Ralph Levine, Freehold, N.J., assignor to Cities Service Company

Filed Feb. 18, 1971, Ser. No. 116,325

Int. Cl. C07c *5/02, 13/02*

U.S. Cl. 260—666 P **6 Claims**

A process improvement for producing high purity cyclododecane (CDA) from cyclododecatriene is disclosed wherein after the cyclododecane (as the hydrogenation zone reaction product) and the hydrogenation catalyst is filtered to separate the catalyst and purify the product, the catalyst filter cake is backflushed with a volatile liquid alkane to the hydrogenation zone. The alkane is then volatilized and displaced by cyclododecatriene feed. Retained liquid alkane on the filter is vacuum flushed.



3,703,559

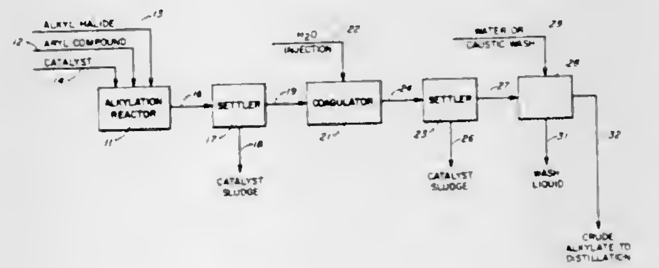
PURIFICATION OF DETERGENT ALKYLATES

Oliver C. Kerfoot, Ponca City, Okla., and George W. Duchmann, Lake Charles, La., assignors to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of application Ser. No. 742,497, July 5, 1968. This application Nov. 25, 1970, Ser. No. 92,737

Int. Cl. C07c *7/00*

U.S. Cl. 260—674 A **7 Claims**



Suspended aluminum halide catalyst sludge is removed from crude detergent alkylate by introducing a small amount of water to the detergent alkylate in order to coagulate the suspended sludge. The coagulated sludge is then separated from the detergent alkylate and the purified detergent alkylate is washed with water or alkaline solution to remove substantially all acidity or inorganic salts present in the product.

3,703,560

3,4-DIPHENYL-1-(4-HYDROXYPHENYL)-CYCLOPENTANE

Rudolf G. Griot, Florham Park, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Original application July 8, 1968, Ser. No. 743,039, now Patent No. 3,598,860. Divided and this application Feb. 24, 1971, Ser. No. 118,519

Int. Cl. C07c *39/12*

U.S. Cl. 260—619 D **1 Claim**

The invention relates to 2-[4-(3',4'-diphenylcyclopentyl)-phenoxy] lower aliphatic monocarboxylic acids and the corresponding lower alkyl esters, and to a process for their production. The compounds are useful as hypolyipidemics.

3,703,561

OLEFIN CONVERSION USING COMPLEXES OF Cu, Ag AND Au WITH ORGANOALUMINUMS

Donald H. Kubicek and Ernest A. Zuech, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Application Mar. 28, 1968, Ser. No. 717,024, now Patent No. 3,558,520, dated Jan. 26, 1971, which is a continuation-in-part of abandoned application Ser. No. 635,693, May 3, 1967. Divided and this application Sept. 17, 1970, Ser. No. 73,233

Int. Cl. C07c *3/62*

U.S. Cl. 260—683 D **11 Claims**

A process for the conversion of olefinic hydrocarbons according to the olefin reaction (e.g., the olefin disproportionation reaction) by contacting the olefinic hydrocarbon with a catalyst comprising a coordination complex of copper, silver, or gold together with an aluminum-containing adjuvant.

3,703,562

SULFONIC ACID CONTAINING ORGANOPOLYSILOXANE COMPOSITIONS

Robert C. Antonen and Gust J. Kookootsedes, Midland, and Arthur J. Field, Bay City, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Mar. 27, 1972, Ser. No. 238,532

Int. Cl. C08f *11/04*

U.S. Cl. 260—825 **14 Claims**

Small amounts of aryl-substituted sulfonic acids are added to siloxane resins curable by the platinum catalyzed reaction of $\equiv SiCH=CH_2$ with $\equiv SiH$ to improve the moisture resistance of the cured resins.

3,703,563

POLYACRYLAMIDE-EPOXIDIZED AMINOPLAST-UREA CONDENSATES

Stanley A. Lipowski, Livingston, and John C. Queen, Jr., Haworth, N.J., assignors to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Filed June 21, 1971, Ser. No. 155,253

Int. Cl. C08g *45/04*

U.S. Cl. 260—836 **8 Claims**

A polymeric cationic condensate is synthesized by reacting a polyacrylamide with an epoxidized aminoplast to form a pre-condensate and then further reacting the pre-condensate with urea. The product is a stable, water soluble composition, useful in paper manufacturing applications as a pigment retention aid, to give improved dry strength, and as a pitch dispersant.

3,703,564

BIS(POLYPHENYLENE OXIDE)-ESTER BLOCK COPOLYMERS

Dwain M. White, Schenectady, N.Y., assignor to General Electric Company

No Drawing. Filed Jan. 5, 1970, Ser. No. 817

Int. Cl. C08g *33/10, 39/10*

U.S. Cl. 260—860 **9 Claims**

The invention relates to block copolymers of the A-B-A type where each A is the phenoxy residue of a poly(2,6-disubstituted-1,4-phenylene oxide) having one terminal hydroxyl per polymer molecule and B is the residue of a compound having two groups which are reactive with the hydroxyl group of said poly(phenylene oxide). These compositions are useful in producing molded articles, films, fibers, etc., having modified properties compared to the parent poly(phenylene oxides).

3,703,565

BLENDS OF ETHYLENE POLYMERS HAVING IMPROVED STRESS CRACK RESISTANCE

Louis D. Hoblit, Williamsburg, Va., and Carl P. Strange, Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 755,831, Aug. 28, 1968, now Patent No. 3,660,530, dated May 2, 1972, which is a continuation-in-part of abandoned application Ser. No. 514,119, Dec. 15, 1965.

This application Feb. 22, 1971, Ser. No. 117,819

The portion of the term of the patent subsequent to May 2, 1989, has been disclaimed

Int. Cl. C08f *29/04, 29/10*

U.S. Cl. 260—876 B **4 Claims**

Blends of ethylene polymers having improved stress crack resistance comprising a high density, high molecular weight polyethylene and a copolymeric constituent containing as an essential ingredient at least one block copolymer of polyethylene and a polymer of butene-1. A method for the preparation thereof which comprises (1) polymerizing ethylene to high density, high molecular weight polyethylene in the presence of a heterogeneous catalyst system, such as a mixture of triisobutyl aluminum and titanium tetrachloride, and a molecular weight control agent, such as hydrogen; (2) withdrawing a major part of the resulting polymer slurry from the polymerization zone; (3) introducing a gaseous alpha-olefin, such as butene-1, into the remaining portion of the still catalytically active polymer slurry and polymerizing the resulting mixture to obtain a block copolymer of polyethylene and a polymer of butene-1; and (4) admixing the withdrawn polymer slurry with the remaining polymer slurry.

3,703,566

GRAFT COPOLYMERISATION PROCESS

Edward William Duck, Southampton, John Michael Locke, Lyndhurst, and Allan John Amass, Southampton, England, assignors to The International Synthetic Rubber Company, Southampton, Hampshire, England

No Drawing. Filed July 31, 1970, Ser. No. 60,099

Claims priority, application Great Britain, Aug. 7, 1969, 39,645/69

Int. Cl. C08f *17/00, 19/04, 27/04*

U.S. Cl. 260—878 R **15 Claims**

A method of preparing a copolymer having an elastomeric hydrocarbon polymeric backbone and a plurality of side chains comprising polymerising one or more polymerisable monomers (as herein defined) in the presence of an unsaturated hydrcarbon elastomeric polymer of iodine number at most 100 and having attached thereto a plurality of alkali metal atoms. In a preferred embodiment the unsaturated hydrocarbon elastomeric copolymer having attached thereto the alkali metal atoms is one prepared by treating in the substantial absence of aromatic compounds an unstaurated hydrocarbon elastomeric polymer of iodine number at most 100 with a complex of an alkali metal hydrocarbon, wherein the hydrocarbon is saturated, and a polar compound. The unsaturated hydrocarbon elastomeric copolymer is preferably an ethylene propylene terpolymer and the polymerisable monomer(s) is/are selected from butadiene, isoprene and styrene. The products are compatible and covulcanisable with other elastomers of high unsaturation.

3,703,567

PROCESS FOR THE PRODUCTION OF SEGMENT COPOLYMERS

Hubert Sutter, Cologne, and Manfred Beck, Schildgen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 13, 1970, Ser. No. 54,328

Claims priority, application Germany, Aug. 2, 1969, P 19 39 420.8

Int. Cl. C08f *1/04, 19/08*

U.S. Cl. 260—880 B **4 Claims**

A process for the continuous solvent-free production of segment compolymers of 1,3-dienes and aromatic vinyl compounds with organolithium initiators in self-cleaning twin-shaft or multiple-shaft screws, wherein a reaction mixture of a 1,3-diolefin, an aromatic vinyl compound and a prepolymer capable of further polymerisation predominantly built up from the 1,3-diolefin, is delivered to the twin-shaft or multiple-shaft screw extruder.

3,703,568

CHLOROPRENE RUBBER COMPOSITION

Takashi Kadowaki, Kenji Itoyama, and Shoya Matsuzawa, Ohmi-machi, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Sept. 17, 1970, Ser. No. 73,174

Claims priority, application Japan, Sept. 24, 1969, 44/75,364

Int. Cl. C08f *29/12*

U.S. Cl. 260—890 **3 Claims**

Chloroprene rubber composition consisting mainly of a mixture of 100 parts by weight of chloroprene polymer and 0.1 to 20 parts by weight of polyvinyl alcohol. The chloroprene rubber composition can be used alone as an adhesive. An adhesive composition having a more excellent stability against layer separation is obtained by adding a metal oxide, and a modified phenol resin and conventional additives to the rubber composition.

ERRATA

For Classes 260—78 R thru 260—575 see:
Patents Nos. 3,703,595 thru 3,703,598

3,703,569

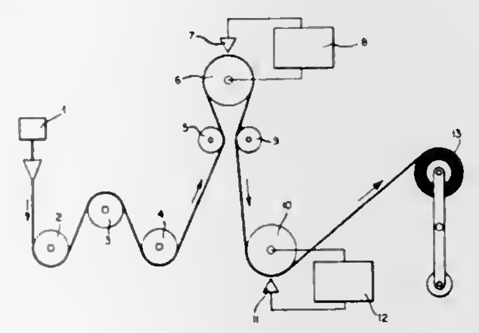
CORONA TREATMENT OF ANTISTAT CONTAINING SHEET OF ETHYLENE OR ETHYLENE COPOLYMER

Richard I. Wolkowicz, Clarksboro, N.J., assignor to Scott Paper Company, Delaware County, Pa.

Filed Mar. 23, 1970, Ser. No. 21,954

Int. Cl. B29d *7/20;* **H05f** *1/02*

U.S. Cl. 264—22 **4 Claims**



A method of preparing a sheet comprising thermoplastic polymeric material selected from polyethylene and copolymers of ethylene and propylene and an antistatic agent which includes the step of subjecting the sheet to corona treatment, whereby the static decay rate of the sheet is increased. The amount of antistat is at least the amount which gives an adequate static decay rate to the sheet after being modified by corona treatment but less than the amount sufficient to produce a measurable increase in the static decay rate of the sheet in the absence of corona treatment.

3,703,570

PROCESS FOR THE PREPARATION OF A SEMIPERMEABLE MEMBRANE FROM POLYMERIZED β-LACTAM UNSUBSTITUTED AT THE NITROGEN ATOM

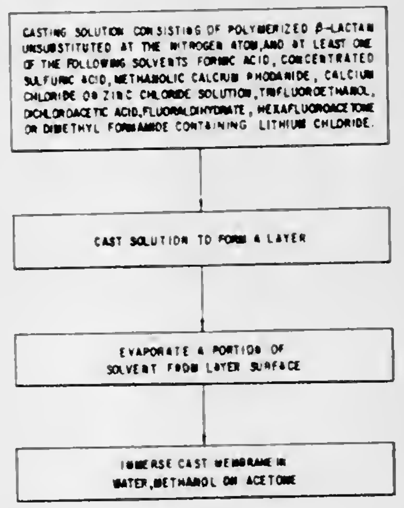
Walter Busch, Wiesbaden-Biebrich, and Franz Schwarzer, Wiesbaden, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Dec. 29, 1969, Ser. No. 888,929

Claims priority, application Germany, Dec. 31, 1968, P 18 17 542.3

Int. Cl. B29d *7/22, 27/04;* **C08g** *20/10*

U.S. Cl. 264—41 **7 Claims**


CASTING SOLUTION CONSISTING OF POLYMERIZED β-LACTAM UNSUBSTITUTED AT THE NITROGEN ATOM, AND AT LEAST ONE OF THE FOLLOWING SOLVENTS FORMIC ACID, CONCENTRATED SULFURIC ACID, METHANOLIC CALCIUM RHODANIDE, CALCIUM CHLORIDE OR ZINC CHLORIDE SOLUTION, TRIFLUOROETHANOL, DICHLOROACETIC ACID, FLUORALDIHYDRATE, HEXAFLUOROACETONE OR DIMETHYL FORMAMIDE CONTAINING LITHIUM CHLORIDE.
CAST SOLUTION TO FORM A LAYER
EVAPORATE A PORTION OF SOLVENT FROM LAYER SURFACE
IMMERSE CAST MEMBRANE IN WATER, METHANOL OR ACETONE

This invention relates to an improvement in the process for the preparation of a semipermeable membrane by pouring a layer of a solution of a plastic onto a support, evaporating a portion of the solvent from the layer whereby the layer is provided with a surface layer poor in solvent, and removing the remaining solvent from the layer by means of a liquid which is miscible with the solvent but does not dissolve the plastic, the improvement comprising employing as the plastic at least one polyamide which is a polymerized β-lactam unsubstituted at the nitrogen atom.

3,703,571

METHOD OF CASTING RIGID FOAM TO SUPPORT A HOLLOW FLEXIBLE PLASTIC SHELL

Arthur H. Roberts, 12 Lynnwood Drive, Westbury, N.Y. 11590

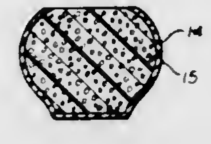
Continuation of abandoned application Ser. No. 760,415, Sept. 18, 1968, which is a division of application Ser. No. 523,778, Jan. 28, 1966, now Patent No. 3,419,455, which is a continuation-in-part of applications Ser. No. 455,764, May 14, 1965, now Patent No. 3,405,026, and Ser. No. 475,989, July 30, 1965, now Patent No. 3,414,456, which in turn are continuations-in-part of abandoned application Ser. No. 22,002, Apr. 13, 1960.

This application May 10, 1971, Ser. No. 142,037

Int. Cl. B29d *27/04*

U.S. Cl. 264—45 **21 Claims**

Process for preparing rigid, impact-resistant article comprising a hollow outer shell component and an inner rigidifier component comprising a cellular plastics material. The article is formed by molding the hollow flexible shell component, removing the molded shell component from its mold, introducing a foamable organic plastic into the shell and allowing it to foam and solidify into a rigid foam in contact with the entire inner surface of the flexible shell.



3,703,572

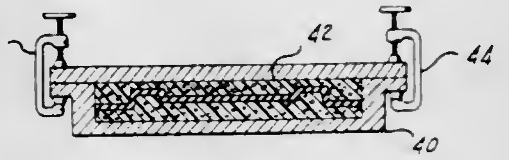
METHOD OF FORMING A MOLD AND CASTING SHALLOW ARTICLES THEREIN

Gerald J. Bellasalma, West Caldwell, N.J., assignor to Plastetics, Inc., Fairfield, N.J.

Filed Nov. 14, 1969, Ser. No. 876,859

Int. Cl. B29c *1/02, 17/04, 7/00*

U.S. Cl. 264—92 **10 Claims**



A thin mold is formed from a pattern out of a thin sheet of thermoplastic synthetic resin, preferably a thermoplastic elastomer. Since this mold is too thin to be used for casting, it is backed with a cast material so that the mold comprises a thin sheet of elastomer and a removable cast backing. After the article is cast in this mold, the backing is removed. This enables the thin mold to be readily and expeditiously removed from the cast article without either damaging the article or the mold.

3,703,573

PROCESS FOR EXTRACTING COPPER, COBALT AND NICKEL VALUES FROM AQUEOUS SOLUTION

George C. Blytas, Kensington, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Aug. 5, 1971, Ser. No. 169,423

Int. Cl. C01g *3/00, 51/00, 53/00*

U.S. Cl. 423—24 **7 Claims**

4 - alkyl - 1,2-cyclohexanedione dioximes selectively extract copper, cobalt and nickel values from aqueous solutions of pH 2–9.

3,703,574

PROCESS FOR THE PREPARATION OF STABILIZERS FOR HALOGEN-CONTAINING SYNTHETIC RESINS

Andre S. van den Berg, North Beegden, Netherlands, assignor to N.V. Chemische Fabriek v/h Dr. A. Haagen, Roermond, Netherlands

No Drawing. Filed Dec. 23, 1968, Ser. No. 786,476

Claims priority, application Netherlands, Dec. 22, 1967, 6717564

Int. Cl. C01g *21/16, 21/20;* **C08d** *11/04*

U.S. Cl. 423—462 **8 Claims**

This invention relates to a process for the preparation of complex basic lead compounds to be applied as stabilizers for halogen-containing synthetic resins, in which process a suspension of lead oxide in water is reacted at increased temperatures with hydrochloric acid in the presence of a small amount of a lower aliphatic carboxylic acid, and optionally in the presence of one or more other inorganic acids and/or one or more other organic acids, and the hardly soluble reaction product formed is separated from the reaction mixture, whereby the amount of hydrochloric acid added is such that the chlorine content of the obtained product amounts to 1.5–5.5 percent by weight.

3,703,575

RECONSTRUCTED CARTILAGINOUS TISSUE AND METHOD OF IMPLANTING IT INTO THE HUMAN OR ANIMAL BODY

Heinrich Thiele, Neue Universitaet Haus A2,
Kiel, Germany

No Drawing. Original application Oct. 2, 1967, Ser. No. 671,981. Divided and this application Dec. 23, 1970, Ser. No. 101,124

Int. Cl. A61f *1/00*

U.S. Cl. 3—1 **9 Claims**

Tendons, cartilage tissue, nerve sheaths, and the like cartilaginous materials which are useful in surgery for replacing damaged tissue of this type and for implantation into the body consist of protein- and muco-polysaccharide-containing ionotropic gels with oriented filamentary molecules. They correspond in their structure to the histological structure of the natural tissue to be replaced and are of high mechanical stability, strength and elasticity.

The reconstructed cartilaginous tissue is implanted in the human and animal body by surgery. It is well tolerated and readily accepted by the human and animal body.

3,703,576

METHOD OF PRODUCING MICRO-CAPSULES ENCLOSING ACETYLSALICYLIC ACID THEREIN

Masao Kitajima, Yoozi Tsuneoka, and Asaji Kondo, Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 10, 1970, Ser. No. 62,410

Claims priority, application Japan, Aug. 8, 1969, 44/62,738

Int. Cl. A61j *3/07*

U.S. Cl. 424—35 **10 Claims**

A method for encapsulating acetylsalicylic acid which comprises dispersing acetylsalicylic acid in an organic solvent solution of a cellulose derivative, dispersing the resulting dispersion in the form of droplets in a concentrated aqueous solution of an inorganic salt and evaporating the organic solvent from the system, is disclosed.

3,703,577

4-(THIAZOLYL) PYRIDINIUM SALTS AND 4-(OXAZOLYL) PYRIDINIUM SALTS FOR LOWERING BLOOD GLUCOSE LEVELS

Victor John Bauer, Montvale, N.J., Gretchen Ellen Wiegand, Pearl River, N.Y., and Sidney Robert Safir, River Edge, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 690,382, Dec. 14, 1967, which is a continuation-in-part of application Ser. No. 669,705, Sept. 22, 1967, both now abandoned. This application Mar. 22, 1971, Ser. No. 127,023

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 **5 Claims**

Compositions containing thiazolylpyridinium salts and oxazolylpyridinium salts are described. The use of these compositions as a means for the lowering of blood glucose levels in warm-blooded animals is described.

3,703,578

TOOTH PASTE HAVING IMPROVED TOOTH CLEANING PROPERTIES

John A. Cella, Lake Forest, and William H. Schmitt, Elmhurst, Ill., assignors to Alberto-Culver Company, Melrose Park, Ill.

No Drawing. Filed Apr. 24, 1970, Ser. No. 31,789

Int. Cl. A61k *7/16*

U.S. Cl. 424—49 **5 Claims**

Toothpaste, of the non-self-heating type and of the type which does not liberate oxygen in the presence of water, having improved tooth cleaning properties comprising a mild abrasive agent, in major proportion based upon the weight of the solid ingredients of the toothpaste, and at least 20%, by weight, of the total of the liquid ingredients of said toothpaste, of at least one water-soluble polyoxyalkyleneglycol having a molecular weight of at least 200.

3,703,579

COMPOSITIONS FOR INHIBITING ANOMALOUS DEPOSITION AND MOBILIZATON OF CALCIUM PHOSPHATE IN ANIMAL TISSUE

James S. Widder, Springfield Township, Hamilton County, Ohio (% The Procter & Gamble Company, Miami Valley Laboratories, P.O. Box 39175, Cincinnati, Ohio 45239)

No Drawing. Filed Oct. 30, 1970, Ser. No. 85,804

Int. Cl. A61k *27/00*

U.S. Cl. 424—128 **5 Claims**

Compositions for inhibiting anomalous deposition and mobilization of calcium phosphates in animal tissue, comprising an effective amount of certain ammonium salts of condensation products of ammonia and phosphorus in a pharmaceutical carrier; and a method for treating conditions involving pathological calcification and hard tissue demineralization in an animal comprising administering to such animal said compositions.

3,703,580

ANTIBACTERIAL MEDICINAL COMPOSITIONS

Harold Leon Newmark, Maplewood, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Aug. 29, 1969, Ser. No. 854,260

Int. Cl. A61k *21/00*

U.S. Cl. 424—181 **5 Claims**

Therapeutic compositions are described which comprise a mixture of (a) a 3-(substituted benzamido)-4-hydroxy-8-methyl-7-[3-0-(5 - substituted - 2 - pyrrolylcarbonyl)-noviosyloxy]-coumarin or a nontoxic pharmaceutically acceptable cationic salt thereof and (b) N-methylglucamine.

The compositions can be formulated into suitable dosage forms for oral administration and, when so administered, satisfactory blood levels of the active ingredient are achieved at relatively low dosages.

3,703,581

SUBSTITUTED PYRIDINES EMPLOYED IN ANIMAL HUSBANDRY FOR CONTROLLING COCCIDIOSIS

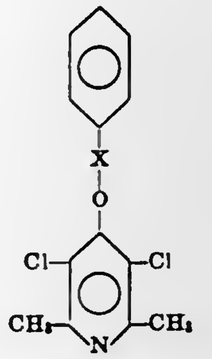
Graham T. Stevenson, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Apr. 1, 1970, Ser. No. 24,815

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 **8 Claims**

Animals are treated by oral administration of a substituted pyridine compound to allow maximum normal growth of the animals by the control of protozoan organisms and mitigate against the attack of gastrointestinal parasites. The pyridine compound is of the formula:



wherein X represents sulfonyl

$$\left(-\overset{|}{S}O_2\right)$$

or carbonyl

$$\left(-\overset{|}{C}=O\right)$$

3,703,582

ARYL PYRIDINE CARBOXYLIC ACIDS IN THE TREATMENT OF INFLAMMATION

Tsung-Ying Shen, Westfield, William V. Ruyle, Scotch Plains, and Gordon L. Walford and Bruce E. Witzel, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of application Ser. No. 836,621, June 25, 1969, now Patent No. 3,655,679, dated Apr. 11, 1972. This application Apr. 20, 1970, Ser. No. 30,300

Int. Cl. A61k *27/00*

U.S. Cl. 424—266 **15 Claims**

Aryl pyridine carboxylic acids and their derivatives are described and the processes for preparing the same are disclosed. These compounds exhibit anti-inflammatory properties and also possess an effective degree of antipyretic and analgesic activity.

3,703,583

ANTICALCULUS FORMULATIONS

Donald J. Martin, Fair Lawn, N.J., assignor to Lever Brothers Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 700,007, Jan. 24, 1968. This application June 10, 1971, Ser. No. 151,954

Int. Cl. A61k *7/16*

U.S. Cl. 424—54 **1 Claim**

Dental formulations, such as tooth paste, tooth powder, and mouth wash, containing anticalculus agents selected from the group consisting of N-methyl-N-dodecyl-N-(2-hydroxyethyl) - N - benzyl ammonium chloride, N-methyl-N-(2-hydroxydodecyl) - N - (2-hydroxyethyl)-N-benzyl ammonium chloride, N-methyl-N-(2-hydroxytetradecyl)-N-(2-hydroxyethyl - N - benzyl ammonium chloride, and di-isobutylphenoxy-ethoxy-ethyldimethyl-benzyl ammonium chloride, are disclosed.

3,703,584

PROCESS OF SENSITIZING CONVERTED-TYPE SILVER HALIDE EMULSIONS WITH NOBLE-METAL SALTS

Robert Franklin Motter, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Aug. 20, 1970, Ser. No. 65,696

Int. Cl. G03c *1/28*

U.S. Cl. 96—108 **10 Claims**

Conversion-type silver halide emulsions are made by adding a noble-metal salt to the emulsion before or during the conversion step. In one embodiment, gold salts, which are generally known as silver halide sensitizers, are added after initial formation of the grain in the conversion process and before 80% of the conversion step is complete. Improved internal-radiation sensitivity is observed in converted-type emulsions made by this process.

3,703,585

D.C. SPUTTERING OF PARTICULATE POLYMERIC COMPOUNDS ONTO A SUBSTRATE

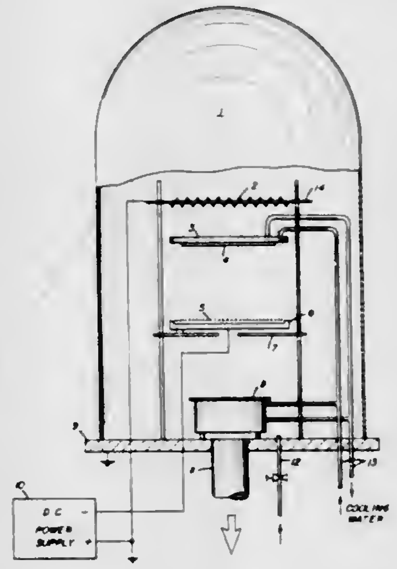
John L. Agnone, Rochester, Robert V. Fister, Hilton, and Jon C. Sheppard, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 24, 1970, Ser. No. 49,468

Int. Cl. C23c *15/00*

U.S. Cl. 204—192 **6 Claims**

A polymeric material such as Teflon polytetrafluoroethylene (PTFE) is glow coated on a substrate inside a chamber by placing a thin layer of PTFE powder in a shallow tray constituting a cathode, and applying a D.C. potential between the cathode and an anode to sputter the polymeric material and form a thin film on the substrate. The substrate can be a part of the anode.



3,703,586

STABILIZATION OF POLYMERS AGAINST POST-POLYMERIZATION CROSSLINKING

Bruce W. Habeck, Cuyahoga Falls, and Donald E. Miller, Akron, Ohio, assignors to The Goodyear Tire and Rubber Company, Akron, Ohio

Original application Oct. 19, 1967, Ser. No. 676,428, now Patent No. 3,563,949, dated Feb. 16, 1971. Divided and this application Sept. 18, 1970, Ser. No. 73,604

Int. Cl. C08f *45/58*

U.S. Cl. 260—45.95 R **6 Claims**

Polymers containing divinyl benzene and stabilized with phenolic stabilizers such as 2,5-ditert.butyl hydroquinone and 4,4′-methylene bis(2,6-ditert.butyl phenol).

3,703,587

USE OF POLY-E STER-AMIDE-ACIDS AS RUST OR CORROSION INHIBITORS

Theodore Spanos III, Immokalee, Fla., and Richard L. Godar, St. Louis, Mo., assignors to Petrolite Corporation, Wilmington, Del.

No Drawing. Original application June 3, 1968, Ser. No. 733,788. Divided and this application June 7, 1971, Ser. No. 150,833

Int. Cl. C23f *11/14*

U.S. Cl. 21—2.5 **8 Claims**

Process of inhibiting corrosion of metals and alloys in contact with corrosive media comprising contacting said metals and alloys with poly-ester-amide-acids formed by reacting (1) an alkyl or an alkenyl succinic acid or the anhydride thereof with (2) a polyol, the product of which is reacted with an alkanol amine to form an ester-amide and then reacting so-formed ester-amide with an alkyl or an alkenyl succinic acid or the anhydride thereof.

3,703,588

METHOD FOR IMPARTING ANTISTATIC PROPERTIES TO POLYMERIC MATERIALS

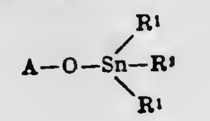
Norio Saito, Nara-ken, and Hiroshiro Kimura, Uji-shi, Japan, assignors to Norio Saito, Nara-ken, and Unitika Ltd., Hyogo-ken, Japan

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,899

Int. Cl. D06m *13/50*

U.S. Cl. 117—138.8 B **5 Claims**

An organic tin compound of the formula:

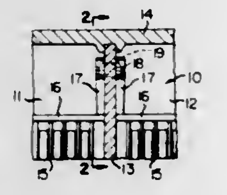


$$A-O-Sn\begin{matrix}\nearrow R^1\\ -R^1\\ \searrow R^1\end{matrix}$$

wherein A is a residue of monoalkyl phosphate, dialkyl phosphate, monoalkyl phosphite, dialkyl phosphite, alkanecarboxylic acid, alkanedicarboxylic acid, monoalkyl alkanedicarboxylate, alkenedicarboxylic acid, monoalkyl alkenedicarboxylate, arenecarboxylic acid, arenedicarboxylic acid, monoalkyl arenedicarboxylate, alkanesulfonic acid, arenesulfonic acid, arenedisulfonic acid, monoalkyl arenedisulfonate, or alkylsulfuric acid, and R^1 and R^2 are each alkyl, aryl or aralkyl, which is produced on polymeric materials to fix firmly thereon and imparts them excellent durable antistatic properties against both washing and dry-cleaning.

3,703,589
BATTERY AND METHOD OF MAKING THE SAME

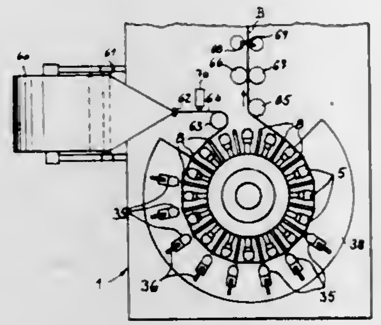
Canby A. Rigsby, Jr., Elmwood, Ind., assignor to Globe-Union Inc., Milwaukee, Wis.
Continuation of application Ser. No. 200,713, June 7, 1962. This application Dec. 20, 1965, Ser. No. 520,300
Int. Cl. H01m *5/00, 35/32*
U.S. Cl. 136—134 R 23 Claims



A storage battery having at least two cells separated by a partition with an intercell connector extending through the partition near the top and consisting of an integral mass of metal connected to the plates of one cell or one side of the partition and to the plates of the other cell on the other side of the partition and leading sealingly through the partition.

3,703,590
APPARATUS FOR THE PRODUCTION OF SYNTHETIC PLASTIC BAGS

Hans Holler and Josef Breidenbach, Bergisch Gladbach, and Aloys Milles, Leichlingen, Germany, assignors to Gebruder Heller G.m.b.H., Bergisch Gladbach, Germany
Filed June 21, 1971, Ser. No. 154,957
Claims priority, application Germany, June 22, 1970, P 20 30 599.1
Int. Cl. B30b *15/34*
U.S. Cl. 156—583 15 Claims



Apparatus for the production of bags having overlapping layers of bondable synthetic plastic material has an annulus of first sealing members which are rotated by a carrier about a vertical axis and a set of second sealing members mounted on a platform which is oscillatable back and forth about the axis and moves for a certain interval at the exact speed of the first carrier while the carrier and the platform rotate in the same direction to thereby maintain each second sealing member in alignment with the adjoining first sealing member. A blank having overlapping bondable layers is advanced between the first and second sealing members at the exact speed of and in the same direction as the first sealing members, and the platform support pneumatic cylinders which press the second sealing members toward the adjacent first sealing members while the platform rotates in the same direction and at the speed of the carrier whereby the cooperating first and second sealing members compress selected portions of the blank therebetween to provide such portions with seams. The blank is thereupon severed midway across each seam to yield a succession of discrete bags each of which is open at one or both ends, depending on the nature of the blank. The first sealing members alternate with rod-shaped guide members which engage the blank and are movable radially of the carrier to change the length of the path for the blank. The first sealing members can be retracted away from the path for the blank to prevent charring when the apparatus is idle.

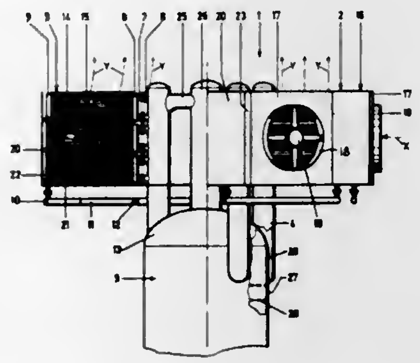
3,703,591
TRIGLYCERIDE HYDROLYSIS AND ASSAY

Giovanni Bucolo, San Diego, and Harold David, Los Angeles, Calif., assignors to Calbiochem, Los Angeles, Calif.
No Drawing. Filed Dec. 16, 1970, Ser. No. 98,904
Int. Cl. C12k *1/04*
U.S. Cl. 195—103.5 R 35 Claims

Glycerol esters present in aqueous media, such as serum triglyceride and milk fat, are assayed by complete enzymatic hydrolysis using both a lipase and a protease, whereupon the liberated glycerol is determined. A number of alternative enzymatic procedures are provided for the glycerol assay, all in the original aqueous medium, such as conversion to glycerol-1-phosphate with glycerol kinase; conversion of ATP to ADP by the same reaction followed by conversion of the ADP plus phosphoenolpyruvate using pyruvate kinase to ATP and pyruvate ion followed by determining the latter; and alternatively converting the pyruvate ion so formed with NADH using lactate dehydrogenase to lactate ion and NAD and determining the latter by optical measurement.

3,703,592
CONDENSER FOR LOW BOILING FRACTIONS IN RECTIFYING OR DISTILLING COLUMNS

Harry Kassat, Bochum, Ernst Kissel, Ludwigshafen, and Herbert Kolenda, Herbede, Germany, assignors to Gea Luftkuhlergesellschaft Happel GmbH & Co. K.G., Bochum, Germany
Filed July 27, 1970, Ser. No. 58,418
Claims priority, application Germany, Aug. 1, 1967, P 19 39 245.1
Int. Cl. B01d *3/00, 5/00*
U.S. Cl. 202—185 B 24 Claims



A condenser for the head fraction in distilling or rectifying columns has vertical risers which are connected to and extend upwardly from the shell of the column. The risers support pairwise arranged groups of horizontal, vertical or sloping heat-exchanging pipes which extend outwardly from and receive the fraction from the respective risers. Each pair of groups carries a housing which serves to shield the pipes from wind and precipitation and supports an adjustable axial fan which circulates atmospheric air across the pipes to effect condensation of the fraction. The compartments between the neighboring pairs of groups are partially enclosed to prevent immediate recirculation of heated air. The condensate is collected in chambers which return some of the condensate into the shell by gravity flow.

3,703,593
METHOD OF PREPARING AN IMPROVED DEHYDROGENATION CATALYST

Robert R. Turley, Lake Jackson, William M. Castor, Clute, and Kenneth R. Nunnally, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.
Filed July 10, 1970, Ser. No. 53,881
Int. Cl. B01j *11/22*
U.S. Cl. 252—470 11 Claims

A method for preparing an improved dehydrogenation catalyst comprising iron oxide, an alkali metal oxide, and a chromium compound wherein an improvement is achieved by employing both yellow and red iron oxides in particular proportions with respect to each other in the preparation of the catalyst.

3,703,594
METHOD FOR MANUFACTURING A PHOTOCONDUCTIVE POWDER

Shigeaki Nakamura and Tadao Nakamura, Kawasaki-shi, and Tadao Kohashi, Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Continuation-in-part of abandoned application Ser. No. 715,045, Mar. 21, 1968. This application Nov. 9, 1971, Ser. No. 197,070
Claims priority, application Japan, Mar. 31, 1967, 42/20,846; Apr. 7, 1967, 42/22,545
Int. Cl. H01c *7/08*
U.S. Cl. 252—501 6 Claims

A photoconductor of the kind consisting essentially of CdSe or CdS-Se, and containing copper as an activator and a halogen as a coactivator. In the photoconductor, zinc is added as a further additive in order to improve its sensitivity to a low intensity optical input and to increase its dark resistance so that the photoconductor can be employed for the manufacture of various photoelectric devices having an improved and stable operating characteristic.

3,703,595
GLASS-CLEAR POLYAMIDES

Georg Falkenstein, Ludwigshafen, Hans Georg Peine, Frankenthal, and Helmut Doerfel, Paul Raff, and Ludwig Schuster, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Continuation-in-part of application Ser. No. 674,102, Oct. 10, 1967. This application Apr. 20, 1970, Ser. No. 30,213
Claims priority, application Germany, Oct. 18, 1966, P 15 95 354.5
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R 4 Claims

Glass-clear polyamides consisting essentially of polymeric condensation products of a mixture of stereoisomers of 2,2-bis-(4-aminocyclohexyl)-propane and an aliphatic or carbocyclic dicarboxylic acid having six to ten carbon atoms and, if desired, caprolactam or adipic acid and hexamethylene-diamine. The polyamides are useful for the production of moldings.

3,703,596
COATING COMPOSITIONS FOR ELECTRODEPOSITION

Matthias Marx, Bad Durkheim, Ernst Becker, Ludwigshafen, and Herbert Spoor, Limburgerhof, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Jan. 19, 1971, Ser. No. 107,852
Int. Cl. C08f *15/40*
U.S. Cl. 260—29.6 TA 6 Claims

The present invention relates to coating compositions which may be deposited onto cathodes and are thus suitable for electrocoating processes. The compositions comprise copolymers containing polymerized units of

(1) at least one nitrogen-basic olefinically unsaturated compound,
(2) 3a,4,5,6,7,7a-hexahydro-4,7-methanoindenyl acrylate-5 or methacrylate-5,
(3) at least one copolymerizable olefinically unsaturated derivative of at least one oxa-alcohol and, if desired,
(4) further copolymerizable olefinically unsaturated monomers, which copolymers are used for electrocoating in aqueous solution or dispersion at least partly in the form of salts of water-soluble acids. The compositions of the invention are suitable for the production of durable coatings on metal parts.

3,703,597
PREPARATION OF BENZILIC ACID COMPOUNDS

Werner B. Rothweiler, Mobile, Ala., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed July 22, 1969, Ser. No. 843,844
Int. Cl. C07c *65/14*
U.S. Cl. 260—520 4 Claims

A novel and simple procedure is provided for synthesizing benzilic acid compounds and particularly, 4,4'-dihalobenzilic acids such as, for example, 4,4'-dibromobenzilic acid and 4,4'-dichlorobenzilic acid by a novel and simple procedure involving reacting a bis-(substituted or unsubstituted phenyl) acetic acid with a halogenating agent followed by hydrolysis. The benzilic acid compounds thus produced are useful as intermediates in the preparation of benzilic acid esters, the last mentioned compounds being employed as acaricidal and insecticidal agents.

3,703,598
PURIFICATION OF p-AMINOPHENOL

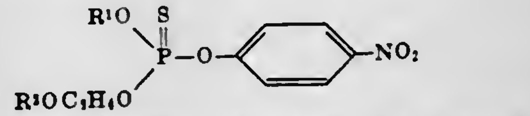
Frank A. Baron, Short Hills, N.J., assignor to Mallinckrodt Chemical Works, Lodi, N.J.
No Drawing. Filed Nov. 4, 1969, Ser. No. 874,072
Int. Cl. C07c *85/16, 91/44*
U.S. Cl. 260—575 10 Claims

A process for the purification of crude p-aminophenol by recrystallization from aqueous polyfunctional mild acids, including phosphoric, lactic, glycolic and citric acids.

3,703,599
INSECTICIDAL PHOSPHORIC ACID ESTERS

Zitsuichi Kishikawa, Osaka, and Sadafumi Maekawa, Kawachi-Nagano, Japan, assignors to Nihon Nohyaku Kabushiki Kaisha, Tokyo, Japan
No Drawing. Filed Jan. 16, 1969, Ser. No. 791,769
Int. Cl. A01n *9/36*
U.S. Cl. 424—217 11 Claims

An insecticide composition comprising at least one of the organic phosphoric acid esters having the following formula:



wherein R^1 and R^2 respectively stand for lower alkyl radicals and an inert carrier.

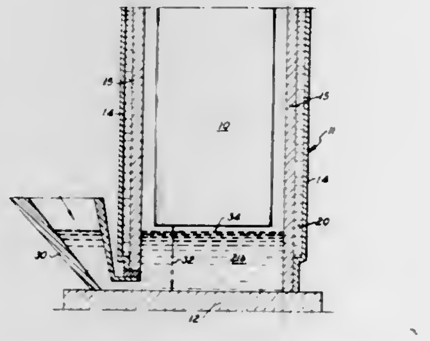
3,703,600
METHOD OF STARTING ELECTROSLAG REMELTING PROCESS WITH MOLTEN SLAG

William W. Scott, Jr., Parkesburg, Pa., assignor to Lukens Steel Company, Coatesville, Pa.

Filed Dec. 29, 1971, Ser. No. 213,561

Int. Cl. H05b *3/60*

U.S. Cl. 13—9 **7 Claims**



The starting up of an electroslag remelting process with molten slag, the volume of such slag being inherently variable within determinable limits, by positioning the bottom of the electrode preferably not more than 2 inches above the maximum anticipated slag level, charging the molten slag into the bottom of the mold within a period of preferably 1 to 4 minutes, and immediately thereafter with voltage applied to the electrode, lowering same at a speed of between 5 and 30 seconds per inch until contact is made with the top of the slag and a current flow is registered, the slag becoming highly fluid within a few minutes thereafter.

3,703,601
LADLE FOR INDUCTIVE TREATMENT

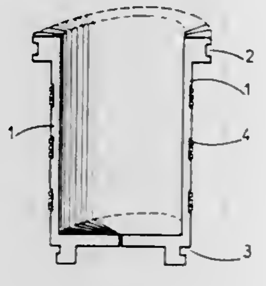
Louis Babel, Sauvigny-les-Bois, France, assignor to Creusot-Loire, Paris, France

Filed April 7, 1971, Ser. No. 131,926

Claims priority, application France, June 16, 1970, 7022041

Int. Cl. H05b *5/12*

U.S. Cl. 13—27 **1 Claim**



A ladle for inductive treatment, having a non-magnetic metal casing and a refractory lining, the metal casing being made up of a plurality of elements each forming an open circuit, each of small section relative to the inductive vector and each insulated from its neighbors.

ERRATUM

For Class 16—126 see:
Patent No. 3,703,683

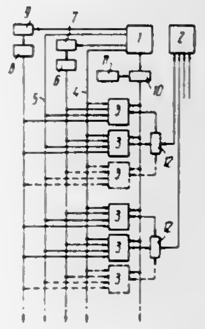
3,703,602
MACHINE FOR TEACHING FOREIGN LANGUAGES

Leonid Valdimirovich Shenshev, prospekt, 88, Korpus 3, kv. 126, Moscow, Leninsky, U.S.S.R.

Filed Nov. 4, 1970, Ser. No. 86,859

Int. Cl. G09b *5/04*

U.S. Cl. 35—35 C **12 Claims**



A machine for teaching foreign languages, comprising a multichannel magnetic sound recorder with a tape loop carrying pre-recorded fragments of speech and control signals, and students' terminals connectable to the channels of said magnetic sound recorder to synthesize various phrases from the pre-recorded speech fragments, each of said terminals comprising: an acoustic output unit; a phrase shaper incorporating multiple switches; a pause shaper to substitute pauses for various combinations of the fragments of a phrase, said pause shaper being connected to said phrase shaper; a shaper unit for automatic written translation of the oral speech being synthesized, said unit being connected to the phrase shaper and to the pause shaper. The machine enables students to adapt to their personal peculiarities in a versatile manner the form, content and degree of difficulty of the oral exercises being performed.

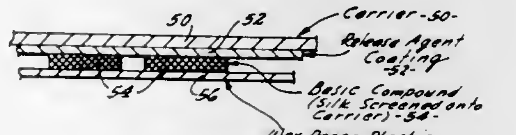
3,703,603
RUB-ON SUB-ELEMENT FOR ELECTRONIC CIRCUIT BOARD

Norman R. Levesoue, and Donald E. Harper, both of Inglewood, Calif., assignors to Circuit-Stik, Inc., Gardena, Calif.

Filed May 10, 1971, Ser. No. 141,655

Int. Cl. H05k *1/02, 3/20*

U.S. Cl. 174—68.5 **4 Claims**


50
52
Carrier -50-
Release Agent Coating -52-
Basic Compound (Silk Screened onto Carrier) -54-
Wax Paper, Plastic Parchment or Tissue -56-
54
56

An electronic sub-element is provided having a particular circuit configuration, and which in conjunction with other similar sub-elements of the same or different circuit configuration, may be adhesively attached to a panel-like base member so as to constitute a printed circuit assembly. The electronic sub-element of the invention is in the form of conductive metallic particles which are adhesively attached to a carrier strip, such as plastic or wax paper, and which form a multiplicity of electrical conductors separated from one another, the particles being intermixed with adhesive material.

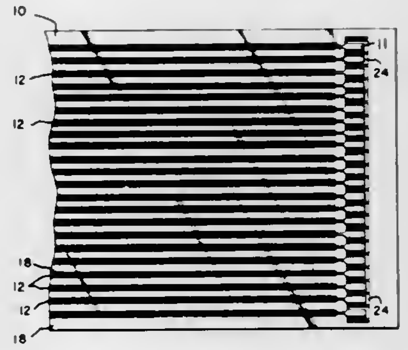
3,703,604
FLAT CONDUCTOR TRANSMISSION CABLE

Homer Ernst Henschen, Carlisle, and Dale Richard Zell, Elizabethtown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 99,194, Dec. 17, 1970, abandoned. This application Nov. 30, 1971, Ser. No. 203,412

Int. Cl. H02g *15/08*

U.S. Cl. 174—75 R **11 Claims**



A flat shielded cable comprising a plurality of parallel spaced-apart signal conductors in a first plane and a shield member in the form of a conductive ground plane facing said signal conductors and being positioned in a second plane, the shield member having preselected amounts of conductive material removed in the area opposite the signal conductors. By varying the amount of shield member surface area facing the signal conductors, the capacitance between the signal conductors and the ground plane can be significantly altered to thereby control the characteristic impedance of the cable.

At the terminating ends of the cable, a zone devoid of conductive material extends transversely across the ground plane in the vicinity of the signal conductors. This zone permits the interconnection of the signal conductors to suitable connector means while preventing electrical contact between the connector contact members, which engage the signal conductors, and the ground plane. To provide impedance matching between the connector and cable ends, the zone is bridged by thin conductive strips integral to the ground plane.

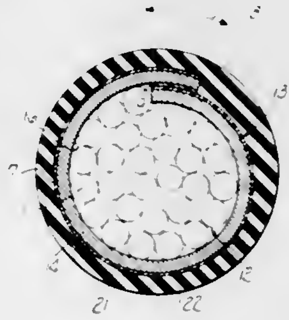
3,703,605
COMMUNICATIONS CABLES WITH SEALED METALLIC MOISTURE BARRIERS

Matthew R. Dembiak, Clifton, N.J., and George H. Webster, Timonium, Md., assignors to Western Electric Company, Inc., New York, N.Y., by said Dembiak and Bell Telephone Laboratories, Inc., Murray Hill, N.J., by said Webster

Continuation-in-part of Ser. No. 809,589, March 24, 1969, abandoned. This application March 17, 1971, Ser. No. 125,362

Int. Cl. H01b *7/18, 11/00*

U.S. Cl. 174—107 **7 Claims**



Successive portions of an aluminum tape having one major surface thereof coated with an adhesive copolymer across the entire transverse width thereof and the other major surface precoated with a stripe of adhesive material along an edge portion are folded longitudinally about successive sections of a cable core which are being advanced along a predetermined path to form an overlapped seam so that the adhesive copolymer on an edge portion of the one major surface of the tape overlaps the stripe. Subsequently, the adhesive materials on the major surfaces along the overlapped seam develop an adhesive bond by the application of heat and pressure prior to or during the extrusion of a plastic jacket over the tape. The adhesive material on the other, now inwardly facing, major surface is substantially restricted in location and is adhesively bonded to the portion of the inwardly facing major surface of the tape which forms the overlapped seam with a portion of the one, now outwardly facing, major surface. The remaining portion of the inwardly facing major surface of the aluminum tape is bare and facilitates grounding the cable at a splice location.

3,703,606
PIN-TYPE INSULATOR

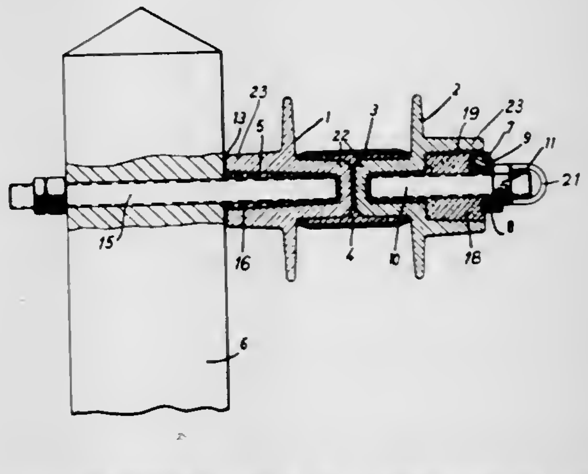
Michel Willem, Cusset, France, assignor to Ceraver, Paris, France

Filed May 21, 1971, Ser. No. 145,828

Claims priority, application France, May 25, 1970, 7019002

Int. Cl. H01b *17/16, 17/32*

U.S. Cl. 174—169 **4 Claims**



In a pin-type insulator, one of two channel-shaped conductor-gripping elements is sealed to the outermost dielectric element to transmit to that dielectric element, either directly or via a cementitious mass filling a cavity in that dielectric element, at least part of the stress imposed on the gripping elements by the conductor which is supported by the insulator.

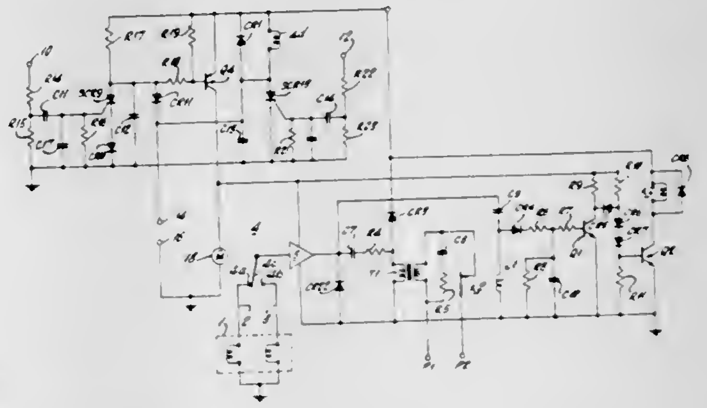
3,703,607
TELEPHONE DIALING AND INFORMATION TRANSMISSION CIRCUIT

Herbert I. Cohen, Pt. Pleasant Beach, N.J., assignor to Acron Corporation, Lakewood, N.J.

Filed Aug. 18, 1970, Ser. No. 64,758

Int. Cl. H04m *11/04*

U.S. Cl. 179—5 P **1 Claim**



The specification discloses a circuit for automatically dialing pre-recorded telephone numbers and transmitting a pre-recorded message to the number dialed. The circuit is triggered by a contact closure indicating an emergency condition. The triggering energizes the recording media drive motor and selects the appropriate information track on the recording media for connection to the telephone lines. Dialing is accomplished by a relay driving arrangement which amplifies prerecorded dial pulse information and attenuates the message information.

3,703,608

AMPLIFIER SWITCHING MEANS FOR A TELEPHONE ANSWERING DEVICE

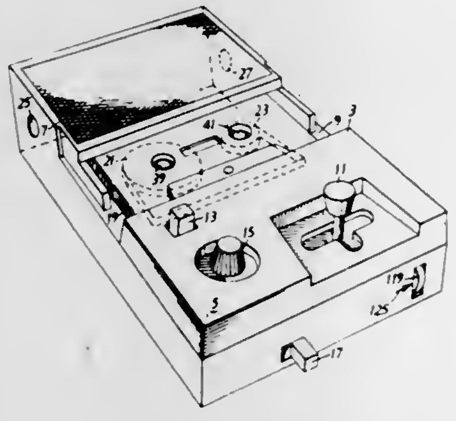
Leonard Rubenstein, London, England, assignor to Learning Appliances Limited, London, England

Filed Sept. 17, 1970, Ser. No. 73,162

Claims priority, application Great Britain, Sept. 19, 1969, 46,246/69

Int. Cl. H04m ***1/64;*** **G11b** ***23/04***

U.S. Cl. 179—6 R **12 Claims**



A sound recording and reproducing machine which has a normal mode of operation wherein a tape is driven from a supply spool to a take-up spool at a speed suitable for reproducing or recording information on the tape and a series of switching operations are performed in synchronism with the movement of tape past a sound recording and reproducing head. To achieve synchronsim a switching shaft is coupled to one of the spools and a switching mechanism is releasably coupled to the switching shaft. The switching shaft is rotated in synchronism with the spool throughout all modes of operation of the machine. The switching mechanism is only coupled to the shaft when the machine is operated in the normal mode of operation, thereby reducing loading on the spool during operation in other modes.

3,703,609

NOISE SIGNAL GENERATOR FOR A DIGITAL SPEECH SYNTHESIZER

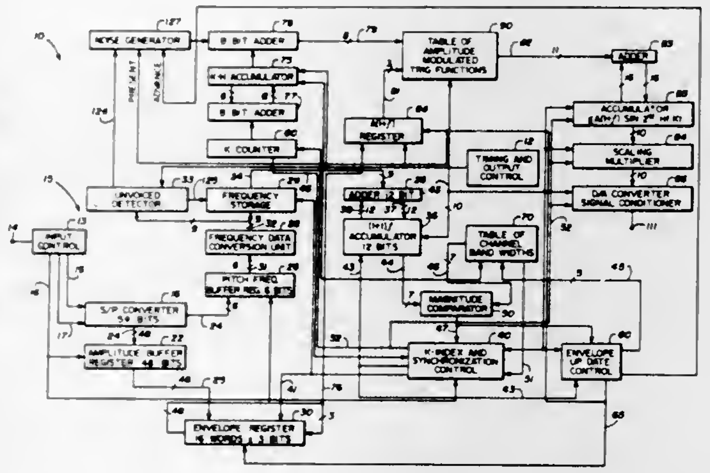
Norman P. Gluth, Dallas, Tex., assignor to E-Systems, Inc., Dallas, Tex.

Filed Nov. 23, 1970, Ser. No. 91,901

Int. Cl. G10l ***1/00***

U.S. Cl. 179—1 SA **14 Claims**

Disclosed is an electrical-signal synthesizer for converting digitally coded information associated with at least one electrical signal, whose frequency, amplitude or phase may vary, to analog signals whose frequency, amplitude or phase varies in substantially the same manner as that of the at least one electrical signal. More specifically, the synthesizer is operative to convert a digital signal representative of a first analog signal, such as a voice signal, having varying parameters, such as frequency or amplitude, into an analog output signal which varies in substantially the same manner as the first signal, and where the digital signal is composed of consecutive frames of words, and one word of each frame is representative of a fundamental frequency associated with the first signal at an instant of time, and successive words in the respective frame are representative of the energy associated with at least one of a plurality of successive bands or spectrum-segments of the first signal to be reproduced, at the given instant in time, each of the successive bands bearing a predetermined frequency relationship and wherein the synthesis of the output signal is accomplished by generating from the word representative of the fundamental frequency in each respective frame, a stream of digital words representative of the frequency and each of its harmonics at each instant of time and producing therefrom a second stream of digital words which is indicative of the frequency components of the original sound and modulating the second stream with amplitude data corresponding to discrete periods of time and adding the respective digital signals so produced for a discrete period of time and converting the same to an analog signal which is representative of the original voice signal.



3,703,610

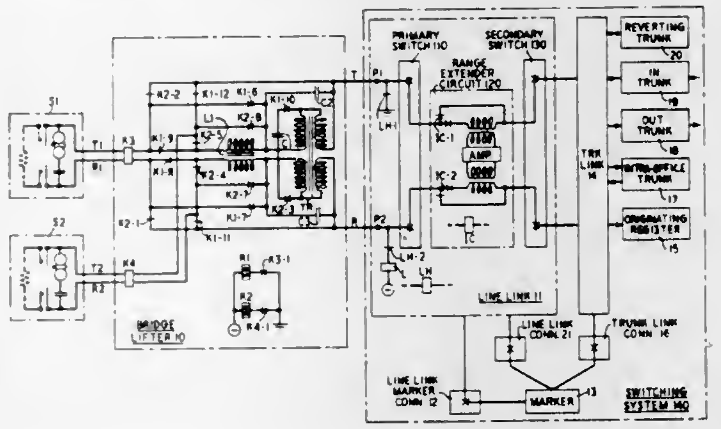
PARTY-LINE BRIDGE-LIFTER

Grace Lakin Ebbe, Clark, and Gustav Paul Markl, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 21, 1970, Ser. No. 66,022

Int. Cl. H04m ***5/00***

U.S. Cl. 179—35 **11 Claims**



A bridge-lifter circuit arranged to match the impedance of party-line off-hook transmission facilities to the impedance of a common transmission line. Circuitry is provided so that when one party-line transmission facility is off-hook a high impedance is switched in series with the remaining on-hook party-line facilities to effectively remove the bridged impedances from across the off-hook facility. When more than one transmission facility is off-hook, an impedance matching transformer, arranged to pass d.c. supervisory signals, is serially inserted between the common transmission line and off-hook party-line transmission facilities to match the combined impedances of the bridged facilities to the impedance of the common line.

3,703,611

TELEPHONE SYSTEM

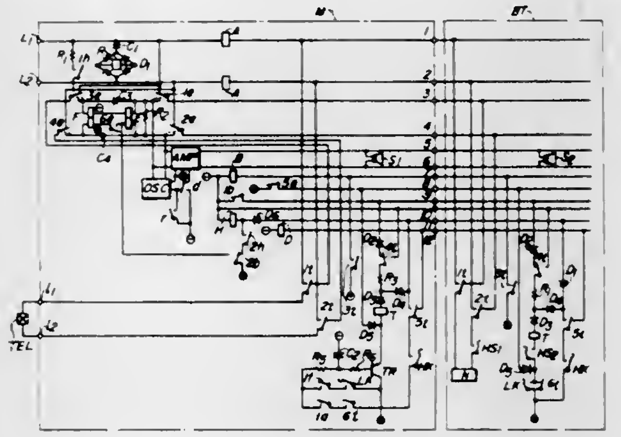
Hiromoto Kiyomiya; Yukio Fukumiya; Mithuzi Aoki, all of Yokohama, and Hiromichi Mama, Kanagawa, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Electronics Engineering Co. Ltd., Yokohama, Japan

Filed March 17, 1970, Ser. No. 20,243

Claims priority, application Japan, March 31, 1969, 44/23812

Int. Cl. H04m ***1/00***

U.S. Cl. 179—99 **10 Claims**



A telephone system having a main unit including a talking path over an office line, a talking path over an extension line, an extension ringing circuit and a control circuit, and a plurality of key telephone sets connected in parallel with the main unit and each having a talking circuit, a call indicating circuit and a control circuit. Each key telephone set is provided with a first non-locking key disposed on the control circuit thereof, a relay which is energized and holds itself via the control circuit of the main unit in response to the actuation of the first non-locking key, and a second non-locking key for releasing the relay via the control circuit of the main unit so that the talking circuit of each key telephone set is connectable with the office line and the extension line through the contacts of the relay.

3,703,612

SINGLE TAKE-UP REEL, AUTOMATIC THREADING, MAGNETIC TAPE DUPLICATING APPARATUS

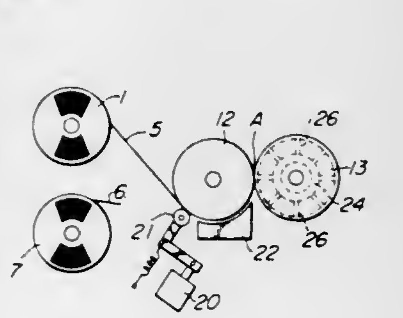
Yutaka Higashida, Nishinomiya, and Kaoru Imanishi, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed March 16, 1970, Ser. No. 19,944

Claims priority, application Japan, March 25, 1969, 44/24512; March 25, 1969, 44/28859; March 26, 1969, 44/27442; July 9, 1969, 44/66831

Int. Cl. G11b ***5/86, 15/66***

U.S. Cl. 179—100.2 E **6 Claims**



A magnetic tape duplicating apparatus of the type in which a recorded master tape and an unrecorded slave tape are taken up on a take-up reel with the magnetic coatings of the respective tapes in intimate contact with each other and a transfer bias magnetic field is impressed on both tapes on the take-up reel thereby to transfer a signal on the recorded master tape onto the unrecorded slave tape, wherein a device is provided for automatically engaging the master tape and the slave tape around the take-up reel at the outset of the tape winding operation, so as to enhance the efficiency of the tape duplicating operation.

3,703,613

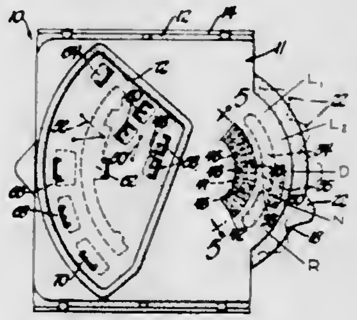
ROTARY SWITCH WITH IMPROVED PIVOTALLY AND RECIPROCABLE MOUNTED THUMBWHEEL ACTUATOR

William E. Abel, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed July 16, 1971, Ser. No. 163,343

Int. Cl. H01h ***19/14;*** **H01b** ***21/76***

U.S. Cl. 200—11 TW **6 Claims**



The shift selector mechanism illustrated includes a thumbwheel switch arrangement for control of an electrically-actuated transmission having conventional R–N–D–L_2–L_1 gearshift selector ranges. The thumbwheel is mounted on a fixed pivot post by a slotted connection for both pivotal and reciprocal movement. A spring urges a follower on the thumbwheel into contact with an offset portion of a fixed arcuate guide slot for pivotal movement between "N" and "D" positions. Manual depression of the thumbwheel moves the follower out of the offset portion against the forces of the spring into contact with one of two spaced-apart portions of the arcuate guide slot for pivotal movement to some one of the R–L_2–L_1 positions. Contacts mounted on an end portion of the thumbwheel align radially and circumferentially with appropriate terminals for actuation of conventional transmission solenoid valves. A detent arrangement assures retention of the thumbwheel in the selected shift position.

3,703,614

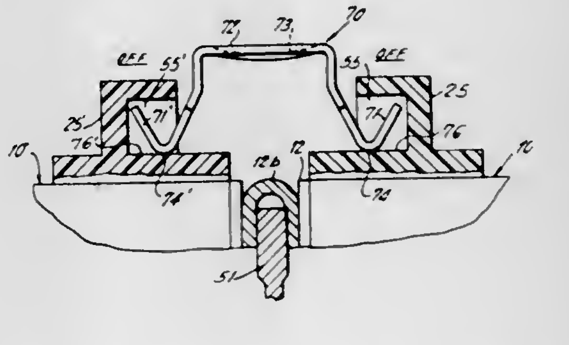
HANDLE TIE FOR PUSH-PUSH CIRCUIT BREAKERS

Martin V. Zubaty; Louis W. Higgins, both of Bellefontaine, Ohio, and I.T.E. Imperial Corporation, Philadelphia, Pa.

Filed Dec. 29, 1971, Ser. No. 213,400

Int. Cl. H01h ***9/26, 33/52***

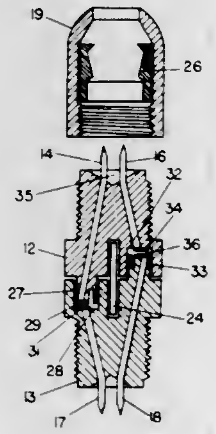
U.S. Cl. 200—50 C **10 Claims**



A non-removable handle tie is connected to a pair of push-push type circuit breakers arranged in back-to-back relationship. The handle tie includes a central finger engageable portion and oppositely extending offset sections entered into cavities of the circuit breakers through rear openings into the cavities. Both the stamped metal and molded plastic constructions for the handle tie are loosely connected to the circuit breaker handles to permit tilting of the handle tie when both handles are not in corresponding positions, yet this connection permits simultaneous manual operation of both circuit breakers. In the molded resilient construction of the handle tie the unit is formed so as to experience controlled bending when the handles are not in corresponding positions. However, when the handle tie is depressed for manual operation, the handle tie exhibits rigidity in transmitting operating forces.

3,703,615
CABLE CONNECTOR AND SWITCH

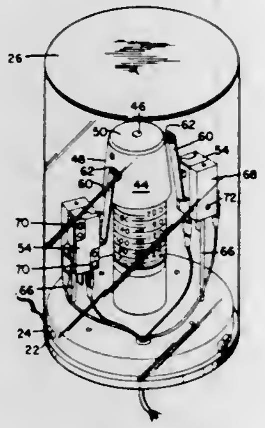
Kuno J. Vogt, 5854 Kantor Court, San Diego, Calif.
Filed June 10, 1971, Ser. No. 151,751
Int. Cl. H01v *33/30*
U.S. Cl. 200—51.07 **5 Claims**



A cable connector and switch for connecting the ends of two round cables as a rotary switch in which identical halves comprising threaded body portions with mating threaded caps are provided with rigid conductors terminating at their outer ends in a point for insertion into the conductive portion of cables and making contact with the insulated conductors within cables. The caps are threadably engaged with the connector portions forcibly contracting restraining fingers onto the cables being connected. The switch halves terminate in mating protuberances and recesses comprising the switch connectors, a portion of the recess being conductively coated for making electrical contact at one extreme of rotation and breaking electrical contact at the other extreme of rotation.

3,703,616
GAUGE ACTUATED CIRCUIT CONTROL UNIT

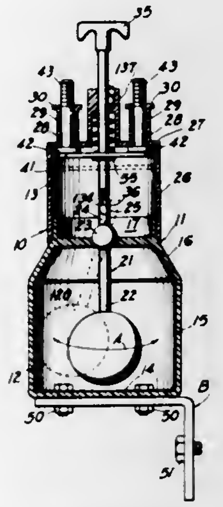
Clyde J. Martin, Cincinnati, Ohio, assignor to Martin Industries, Inc., Cincinnati, Ohio
Filed March 18, 1970, Ser. No. 20,735
Int. Cl. G01d *13/26;* **G01l** *19/06*
U.S. Cl. 200—56 R **15 Claims**



The control unit comprises a base carrying an upstanding pressure gauge upon which is mounted a reciprocative conical control head arranged to actuate switches, contactors, circuit breakers and other electrical components clustered about the gauge, said components being adjustable for selective sequential actuation by the control head.

3,703,617
AUTOMATIC DISCONNECT FOR A VEHICULAR BATTERY

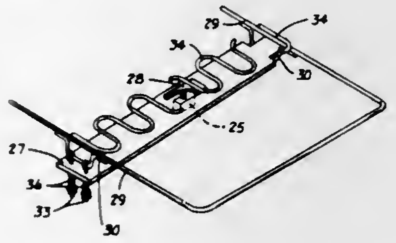
Marvin D. Burnett, Route 2, Alpharetta, Ga.
Filed Oct. 16, 1970, Ser. No. 81,225
Int. Cl. H01h *35/14*
U.S. Cl. 200—61.5 **3 Claims**



An automatic battery disconnecting device for vehicles comprising a hollow, non-conducting housing containing a pivotally mounted pendulum member temporarily supporting a spring-biased pin in an upright operative position, and having a contact member in conducting, bridging engagement with the bottom of two terminals which project through the top of the housing, the terminals being connected in series with the battery of the electrical system of a vehicle. The pendulum members supports the pin in such a manner as to separate from the pin upon an excessive swing of the member, thus allowing the pin to be urged downward by the spring, causing the pin to come to an inoperative position with the contact member being disengaged from the terminals, thereby opening the electrical circuit of the vehicle. The pendulum member would undergo an excessive swing whenever the vehicle, in which the invention is mounted, suddenly experiences an impact or collision. The pin is provided with reset means for reengaging the pin with the pendulum member so as to return the pin to its operative position with the contact member again in conducting engagement with the terminals, closing the electrical circuit within the vehicle. The invention prevents electrical fires due to short circuits whenever the vehicle undergoes any of the above conditions.

3,703,618
VEHICLE SEAT BELT NON-USE WARNING SIGNAL SWITCH MOUNTING

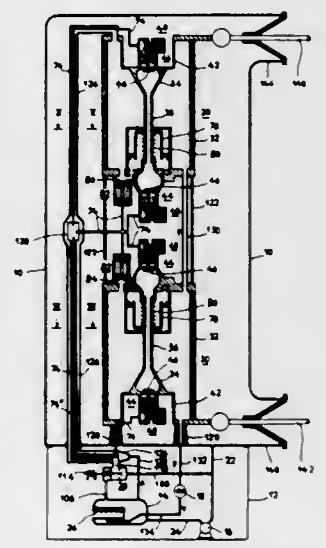
Fred I. Lewis, 2810 East Tenth Street, Anderson, Ind.
Filed March 24, 1971, Ser. No. 127,580
Int. Cl. H01h *3/14*
U.S. Cl. 200—85 R **5 Claims**



A vehicle seat has a switch therein adjustably mounted to respond to application of a selectable minimum seat occupant weight above the switch to close the switch and actuate a seat belt warning circuit, the mounting having compliance and resilience to avoid creation of a lump in the seat as the seat is depressed. One switch mount includes a simple beam type support, while the other is a cantilever beam.

3,703,619
COMPRESSED GAS CIRCUIT INTERRUPTER HAVING A CLOSED-CYCLE HIGH PRESSURE HEATING CIRCULATION

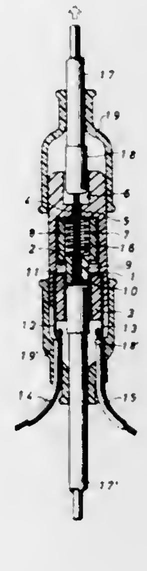
Jean-Claude Henry, Grenoble, France, assignor to Merlin Gerin, Societe Anonyme, Grenoble, France
Continuation-in-part of Ser. No. 667,687, Oct. 24, 1967, abandoned. This application July 6, 1970, Ser. No. 52,428
Claims priority, application France, Nov. 3, 1966, 6682451
Int. Cl. H01h *33/57*
U.S. Cl. 200—148 E **8 Claims**



Compressed-gas circuit breaker including piping for breaker, wherein the temperature is maintained substantially constant by surrounding the entire length of said piping unit with an extinguishing gas feed piping in which a closed circuit forced circulation of heated gas is maintained.

3,703,620
PULL SWITCH WITH HOUSING PORTIONS OF DIFFERENT DIAMETERS AND SWITCH CONTACT MODE AT THE INTERFACE OF SAID PORTIONS

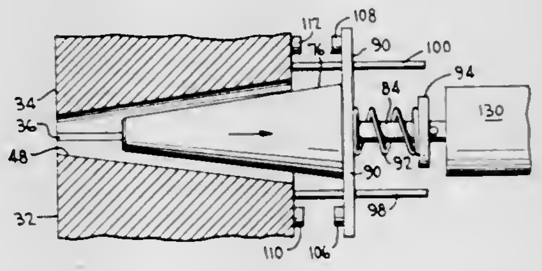
Kazue Watanabe, Tokyo, Japan, assignor to Stanley Electric Co., Ltd., Tokyo, Japan
Filed May 17, 1971, Ser. No. 143,968
Claims priority, application Japan, May 21, 1970, 45/43012
Int. Cl. H01h *17/08, 17/16*
U.S. Cl. 200—161 **1 Claim**



A switching device comprising an electrically insulating movable element included in an insulating housing together with a spring member, an insulating stationary element inserted in an opening of the housing so that it normally contacts the movable element, a pair of contact terminals provided on the stationary element to be brought into contact with a contact on the movable element, and an outer cable incorporated with an inner cable, running through the movable element and the stationary element, for acting on the movable element from the stationary-element side. The insulating stationary element is located in a large diameter portion of the housing but abuts a shoulder forming the interface between the large diameter portion and a smaller diameter portion.

3,703,621
RECIPROCATING FRUSTO-CONICAL PLUG SWITCH CONTACT AND ASSEMBLY

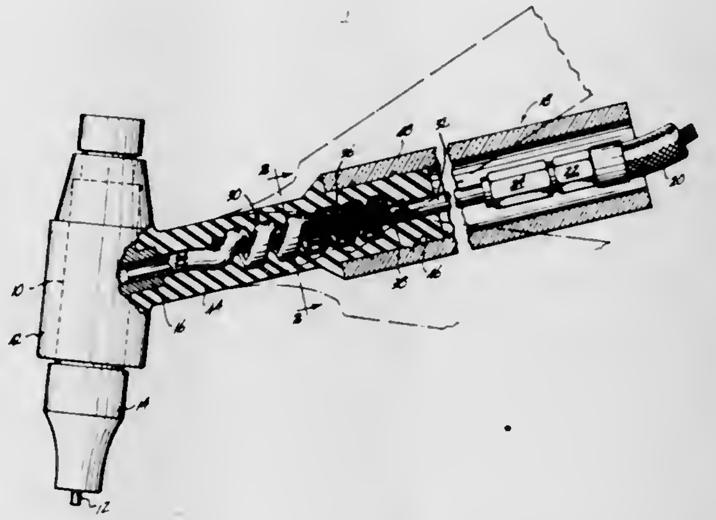
Ronald J. Viola, Fort Lee, and Lawrence V. Keeney, Saddle Brook, both of N.J., assignors to Rapid Electric Co., Inc., Bronx, N.Y.
Filed July 21, 1971, Ser. No. 164,716
Int. Cl. H01h *1/38, 15/10*
U.S. Cl. 200—163 **19 Claims**



A reversing switch for reversing the supply of current to a load from a DC source including a pair of stacked contact structures, each of which defines two electrical switches operated by means of conical connectors movable within conical bores centered at insulating layers in the stacked structures whereby the direction of current supplied to the load is controlled by the operation of the electrical switches.

3,703,622
GAS-SHIELDED ARC TORCH

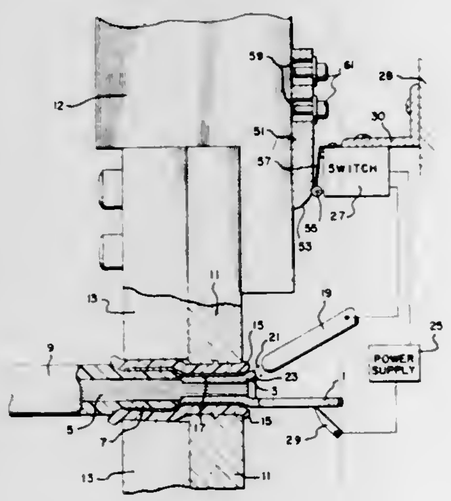
Arthur L. Kleppen, Jr., Kent, Wash., assignor to Conley and Kleppen Enterprises, Inc., Kent, Wash.
Filed Dec. 1, 1971, Ser. No. 203,776
Int. Cl. B23k *9/16*
U.S. Cl. 219—75 **4 Claims**



A gas-shielded arc torch has a flexible shank between the head and the handle and is constructed to employ the inflowing gas to cool the electrode and head, thus maintaining high capacity in the torch, while permitting its production in reduced scale.

3,703,623
PRE-INSULATED AND UNINSULATED WIRE TERMINAL BONDING PROCESS AND APPARATUS

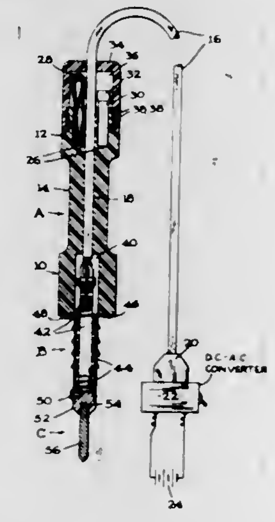
Robert Charles Swengel, Sr., York, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Continuation-in-part of Ser. No. 774,268, Nov. 8, 1968, abandoned. This application Dec. 3, 1970, Ser. No. 94,722
Int. Cl. B23k *9/00*
U.S. Cl. 219—137 **10 Claims**



The disclosure relates to a bonding process and apparatus whereby two metals are brought together under pressure from a pair of dies or a die and anvil, the interface between the metals being made to achieve an intimate bond by an elevation in temperature provided by heat energy conducted via a portion of one or both metals protruding from the forceful contact area, heat being applied slightly before or simultaneously with the application of pressure, and more particularly, the peak pressure of the crimping characteristic curve, and from a source other than the dies.

3,703,624
SELF CONTAINED SOLDER IRON KIT

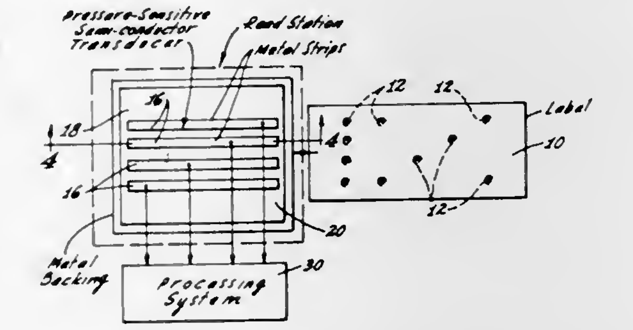
Anton Simsack, 231 East High Street, Elizabethtown, Pa.
Filed Nov. 18, 1970, Ser. No. 90,613
Int. Cl. B23k *3/02;* **H05b** *3/02*
U.S. Cl. 219—229 **3 Claims**



A self-contained solder iron kit which includes an electrically operated soldering iron with a cord storage area provided on the medial portion of the elongated handle, and a storage area provided within the end of the handle remote from the soldering point. The storage area provides for and includes all the necessary soldering materials such as chemicals, flux, fluids, and assorted soldering rods, thereby conveniently embodying everything into one compact kit. Provision is made for double hermetically sealing off the chemicals to avoid potential leakage of corrosion or fumes.

3,703,625
LABEL IDENTIFICATION SYSTEM

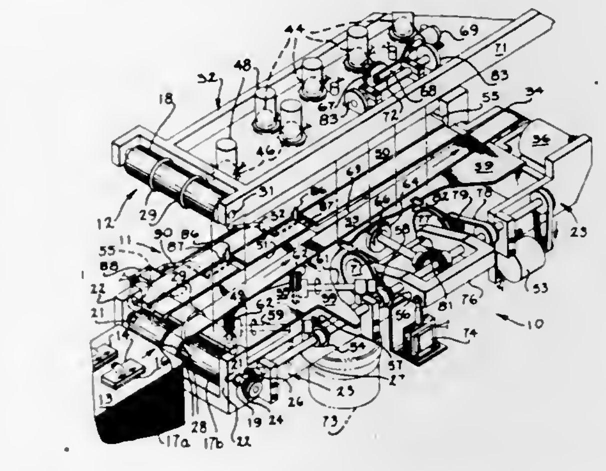
Matthew C. Urbin, 4524 La Barca Drive, Tarzana, Calif.
Filed Oct. 2, 1970, Ser. No. 77,605
Int. Cl. G06k *7/00;* **H01v** *7/00;* **H04r** *17/00*
U.S. Cl. 235—61.11 C **2 Claims**



An improved automatic system is provided for reading identifying labels on receptacles, such as test tubes or bottles, or the like, and for producing appropriate identification signals in response thereto for processing purposes. The labels have protuberances formed thereon in accordance with a preconceived code, and the protuberances are read as the receptacles and their labels are transported past a read station. The read station is equipped with pressure sensitive transducers which sense the protuberances and produce electric signals in response thereto.

3,703,626
DOCUMENT TRANSPORT APPARATUS AND METHOD

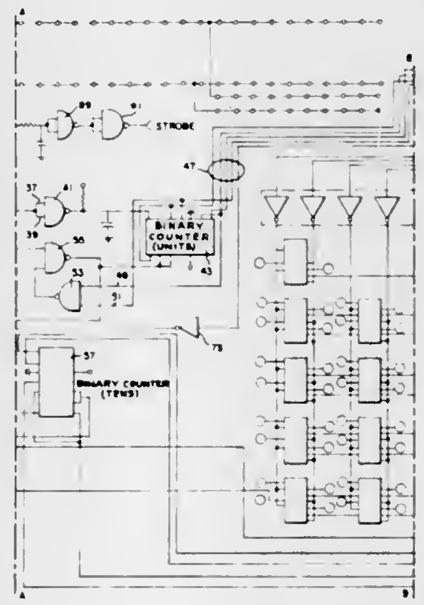
Raymond L. Shanrock, Sunnyvale, Calif., assignor to Data Recognition Corporation, Palo Alto, Calif.
Filed Dec. 14, 1970, Ser. No. 97,976
Int. Cl. G06k *13/26*
U.S. Cl. 235—61.11 R **5 Claims**

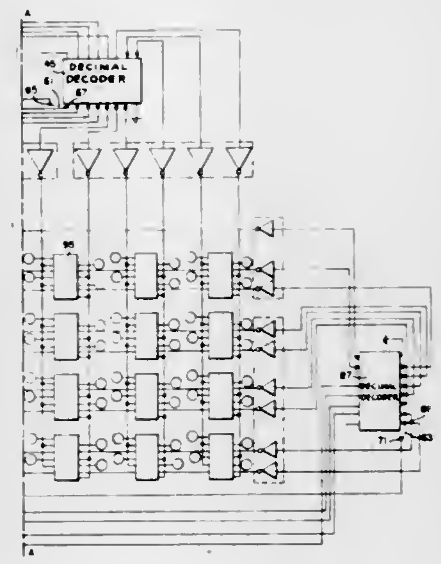


In a document transport apparatus for feeding documents along a path including means for sensing the data carried by the documents, as where the data carried by the document extends in lines across a portion of the document, means for feeding the document to register one of the lines of data with the sensing means so as to read the data. Means for repositioning the document to serve to re-register another of the lines of data with the sensing means for sensing the data in another of the lines. In a particular embodiment, after the sensing means has detected the absence of data in a given line, the document is reversely fed along its path to a position where it can be repositioned for registering a second line of data with the sensing means so as to detect data in the last named line. Repositioning is accomplished by moving a registration guide element or fence from one position to another and then engaging the edge of the document with the guide element while the sensing means remains located at a stationary position. A method is disclosed which carries out the steps of the above functions.

3,703,627
SCANNER SYSTEM

Vander Heyden, and Eric Ernest, both of Hummelstown, Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Oct. 19, 1970, Ser. No. 81,708
Int. Cl. G06k *7/00*
U.S. Cl. 235—61.11 G **2 Claims**



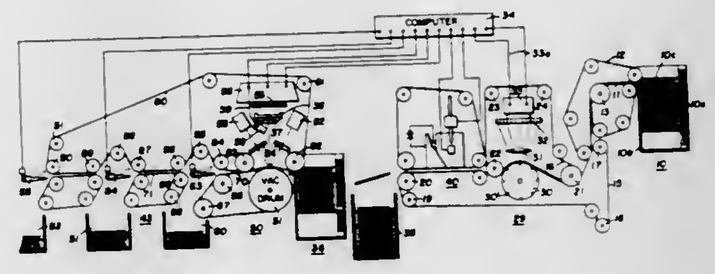


The disclosure relates to an electronic system wherein columns of data to be read out are sampled in predetermined order under control of the scanner to read out information on a column by column basis.

3,703,628
SYSTEM FOR DOCUMENT CODING AND IDENTIFICATION

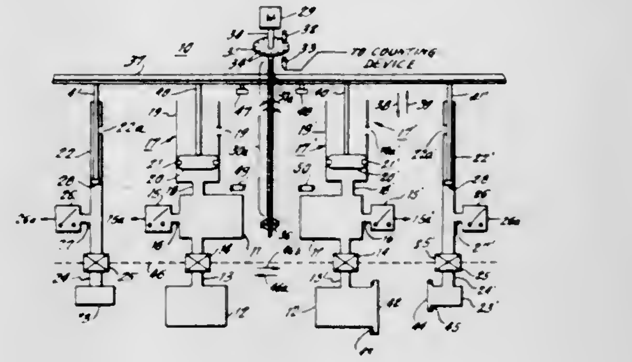
Herman L. Philipson, Jr., Dallas, Tex., assignor to Recognition Equipment Incorporated, Dallas, Tex.
Continuation of Ser. No. 618,923, Feb. 27, 1967, abandoned. This application March 29, 1971, Ser. No. 129,164
Int. Cl. G01d *15/18;* **G06k** *7/10, 9/18*
U.S. Cl. 235—61.9 R **12 Claims**

Method and apparatus for sensing human readable intelligence bearing indicia on documents with high resolution, by generating primary signals representatives of said indicia with translation thereof into simplified bar code, printing the simplified code on the document itself, preferably during continuous travel thereof, and sensing the simple bar code for further handling in sorting and in processing of the data imprinted on the document.



3,703,629
PNEUMATICALLY OPERATED COUNTING DEVICE

Richard B. Hanbicki, Princeton Junction, N.J., assignor to Madatron Corporation, Rocky Hill, N.J.
Filed June 1, 1970, Ser. No. 42,228. The portion of the term of this patent subsequent to Dec. 8, 1987, has been disclaimed.
Int. Cl. G06m *11/00*
U.S. Cl. 235—98 **9 Claims**



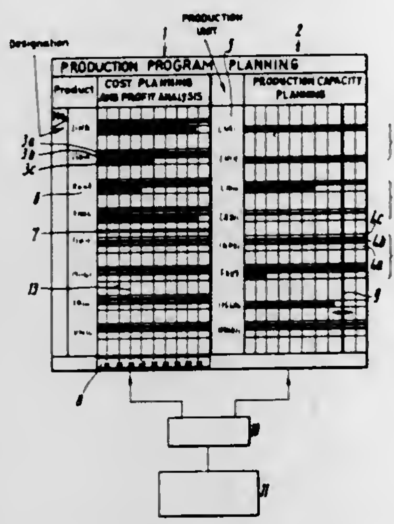
Apparatus for counting large numbers of small articles of uniform size. The time duration taken for the return to ambient pressure of a container housing the parts is compared against the occurrence of the same phenomenon, an empty container employed as a standard. Comparison of these phenomena (either electronically, mechanically or manually) provides an accurate determination of the total number of parts being counted.

The ambient pressure-sensitive switch utilizes optical means for sensitive, accurate detention of pressure, and the encoder system employed provides direct measurements of volume as opposed to time duration of the container pressures (i.e., which are required to return to ambient condition).

3,703,630
ARRANGEMENT FOR PLANNING AND MONITORING A PRODUCTION PROCESS

Franz Gelder, Gabelsberger Str. 36, Salzburg, Austria
Filed Sept. 15, 1970, Ser. No. 72,331
Claims priority, application Austria, Sept. 15, 1969, A8732/69
Int. Cl. H01j *63/04, 1/63;* **G06k** *15/18*
U.S. Cl. 235—151.3 **13 Claims**

An indicator board for visually displaying values obtained by linear programming, such as the degree of utilization of facilities, production output of different units, etc., comprises a board having luminescent strips activated by input signals to extents corresponding to values to be displayed. Symbols


PRODUCTION PROGRAM PLANNING
COST PLANNING AND PROFIT ANALYSIS
PRODUCTION CAPACITY PLANNING
1 Shift
2 Shifts
3 Shifts

designating products and operating units are provided in different fields of the board adjacent to the corresponding strips.

3,703,631
MEAN SPEED INDICATOR SYSTEMS FOR VEHICLES

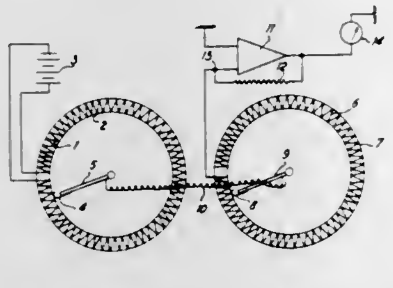
Raymond Gobe, Sainte Genevieve des Bois; Jean Martial Randoing, Boissise le Roi; Max Gobe, La Garenne Colombes, and Jean-Claude Evrard, Perthes en Gatinais, all of France, assignors to Raymond Gobe, Sainte Genevieve and Jean Martial Randoing, Boissise le Roi, France

Filed June 11, 1970, Ser. No. 45,354

Claims priority, application France, June 11, 1969, 6919346

Int. Cl. G06g *7/16, 7/78;* **G01p** *3/52*

U.S. Cl. 235—151.32 **2 Claims**



A means for speed calculator for vehicles in which the distance travelled by the vehicle and the time taken to travel such distance are converted continuously into proportional movements of two members comprises means for continuously displaying the ratio between the amplitudes of the respective movements of the members, the members being electrical components including variable means varied proportionally to the distance travelled and to the time taken respectively, the said variations producing a variation of electrical values, and means for measuring the ratio of the electrical values.

3,703,632
RECURSION FILTER

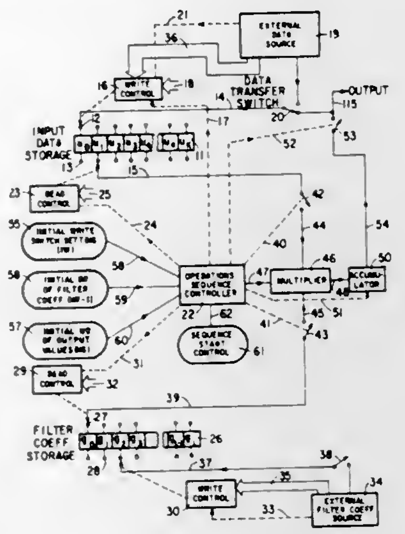
John L. Shanks, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 556,744, June 10, 1966, abandoned. This application Feb. 18, 1972, Ser. No. 227,364

Int. Cl. G06f *7/38;* **G01v** *1/28*

U.S. Cl. 235—152 **6 Claims**

This invention concerns apparatus for filtering signals. Means are provided for emphasizing only some of the frequency components of signals with respect to others. The invention has particular application where the signal to be applied to the filter consists of a set of data obtained by sampling the amplitude of the signal at substantially equal time intervals, i.e.,



digitized data. In this context, I provide apparatus for extremely high speed digital filtering. Automatically the terms in the equation

$$y_n = \sum_{i=0}^{i=N} a_i x_{n-i} - \sum_{j=1}^{j=M} b_j y_{n-j}$$

are carried out by recursion, or a combination of feed forward and feed back terms. The quantities a_i and b_j are stored in a register. Values b_j are automatically called out as appropriate, multiplied by the previous values of the coefficient y_n, i.e., y_{n-j} (which is the recursive part) and summed, while the coefficients a_i are called out and multiplied by the appropriate value of x, then the total summation is made. The apparatus involves both storage means, means for reading out the various values involved, multiplying them together, accumulating them and using a recursive path by which input data can be re-stored in a particular register, as desired.

3,703,633
FLUIDIC COUNTER DEVICE

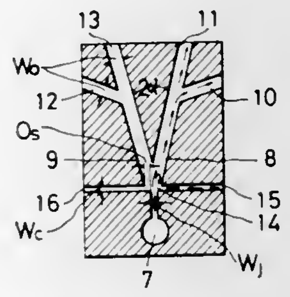
Keiichi Hanada, 28-14 Tamagawa 5-chome Todoroki-cho, Setagaya, Tokyo; Kimihiko Saito, 14-8 Mejiro 3-chome, Toshima-ku, Tokyo, and Akikazu Iwase, 19-8 Hiroh 5-chome, Shibuya-ku, Tokyo, all of Japan

Filed March 22, 1971, Ser. No. 126,574

Claims priority, application Japan, March 23, 1970, 45/23596

Int. Cl. G06d *1/10*

U.S. Cl. 235—201 PF **1 Claim**



The present invention is to provide an improved fluidic counter device, wherein, instead of conventional devices, a pair of air suction ports are provided and preferably provided a pair of vents connected to respective output passages in order to obtain more stable characteristics than those of conventional device.

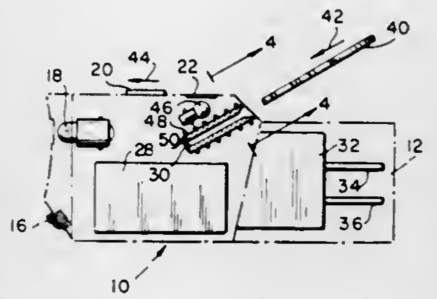
3,703,634
KEY HEATER FLASHLIGHT

Peter A. Bucky, 30 East 81st Street, New York, N.Y.

Filed April 15, 1971, Ser. No. 134,232

Int. Cl. F21l *7/00*

U.S. Cl. 240—10.6 CH **22 Claims**



A key heater flashlight having a conventional flashlight circuit and a rechargeable power source. The flashlight also has a key slot around which a heating coil is deposed and into which the shank of a key can be inserted. Insertion of the key automatically turns on the key heater circuit; the heated key can be used to open a frozen lock such as an automobile lock. An indicating light and the heating coil current turn off automatically when the key is heated to a predetermined temperature. The unit is also provided with two batteries either of which can be selected for use in either the flashlight circuit or the heater circuit. This prevents the entire unit from suddenly becoming inoperative when the battery in use becomes discharged, particularly after a heavy current drain such as that which might be drawn by the heating coil.

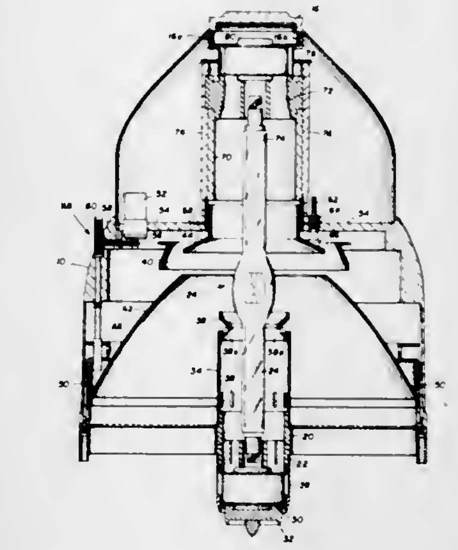
3,703,635
ZOOM LIGHT

Jack L. Burkarth, Dallas, Tex., assignor to E-System Inc., Dallas, Tex.

Filed Sept. 8, 1970, Ser. No. 70,183

Int. Cl. F21v *7/00;* **G02b** *5/10*

U.S. Cl. 240—44.1 **34 Claims**



Multiple reflector elements of an optical system intercept rays emitted by an energy source for reflection into a beamwidth pattern varying from a spotlight configuration to a medium-width beam floodlight. Beamwidth variation is accomplished by adjusting the position of the reflector elements relative to each other in the optical system. Axial flow fans at both the supply and exhaust ends of coaxial ducts provide an airflow for both cooling the energy source (lamp) and the reflector elements of the optical system. In applications where selective radiation is required, a cylindrical filter assembly encloses the energy source to remove undesired portions of the spectral radiation before reflection from the optical system. The filter is extended or retracted from the area between the lamp and the reflector elements by remote control of electric actuators.

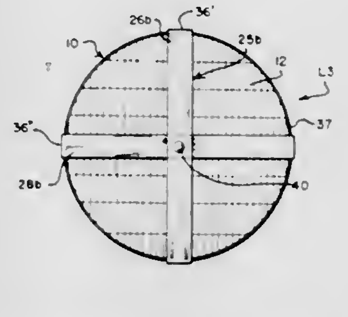
3,703,636
ANTI-FOG HEADLIGHT WITH OPAQUE MASK

Roman A. Schmitt, W255 S-4287 Oakdale Drive, Waukesha, Wis.

Filed April 7, 1971, Ser. No. 132,096

Int. Cl. F21v *11/02*

U.S. Cl. 240—46.43 **3 Claims**



A sealed beam headlamp has a convex front transparent lens integrally joined peripherally to a parabolic reflector. An internal centered incandescent filament is carried by the reflector. An anti-fog mask is applied to the lens at either side or is embedded in the lens. The mask is a black, opaque member. It has arms crossed at a right angle. The arms extend across vertical and horizontal of the lens dividing it into four clear quadrants. The mask can be made of flexible, springy material removably held on the headlamp by flexible tabs at ends of the arms. The arms can be pivotally joined to each other.

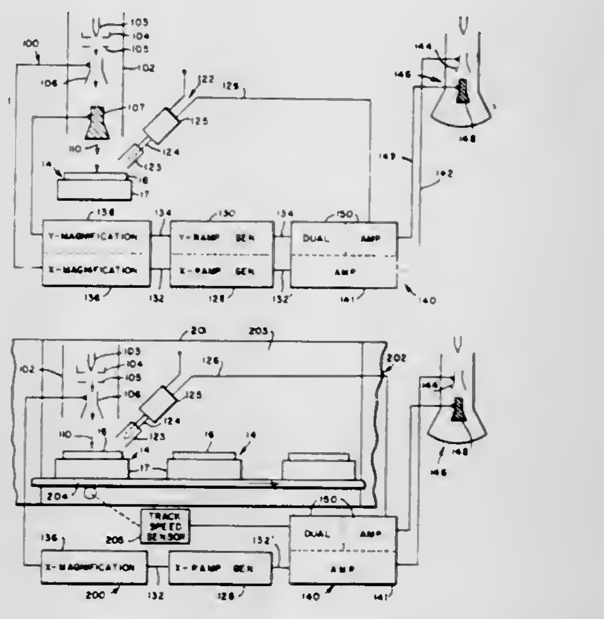
3,703,637
ELECTRON BEAM INSPECTION

Allan Edward Dugan, Hopewell Township, Mercer County, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Nov. 23, 1970, Ser. No. 91,654

Int. Cl. G01n *23/04*

U.S. Cl. 250—49.5 PE **4 Claims**



Differences between the secondary electron emission characteristics of two phases of the same material in response to bombardment by an electron beam are sensed to enable impurities, comprising one of the material's phases, in a sample, comprising the material's phase, to be detected. The electron beam is a low energy beam. Relative motion between the sample and the beam may be effected by sweeping the beam, by moving the sample, or by a combination of the two motions.

3,703,638

IONIZATION RADIATION DETECTOR SYSTEM FOR DETERMINING POSITION OF THE RADIATION

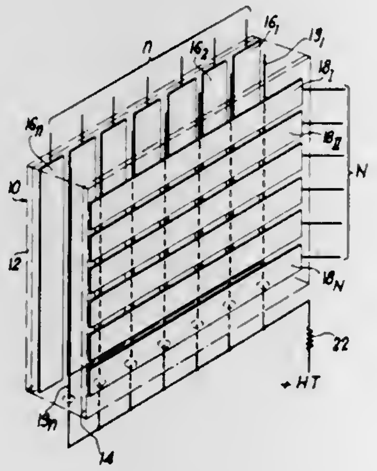
Robert Allemand, Grenoble; Christian Brey, Sassenage, and Jean Jacobe, Montbonnot, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed May 22, 1970, Ser. No. 39,763

Claims priority, application France, May 23, 1969, 6917042

Int. Cl. G01t *1/18*

U.S. Cl. 250—83.6 R **8 Claims**



An X- and γ-radiation detector including a plurality of detecting cells. Each cell comprises an anode and two half-cathodes, the half-cathodes consisting of flat plates. The respective half-cathodes are arranged as othogonal elements so that by applying matrix technique the output of a particular cell can be selected to localize the radiation detected.

3,703,639

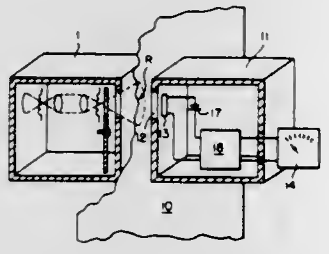
RADIATION MOISTURE MEASURING SYSTEM HAVING THERMOELECTRICALLY COOLED DETECTOR

Emannuel A. Paxhia, Churchville, and David A. Willett, Hopewell, both of N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed Nov. 12, 1969, Ser. No. 875,637

Int. Cl. G01j *5/12*

U.S. Cl. 250—83.3 H **15 Claims**



An infrared moisture measuring system has an infrared radiation sensing element. The sensing element is mounted on a thermo-electric cooler and is contained in a sealed housing. The housing has a window transparent to infrared radiation coming from a material containing moisture which affects the radiation. The housing contains a desiccant which absorbs any moisture that may be present in the housing, and is contained within an outer housing also having a window transparent to said radiation. The atmosphere within each of said housings is substantially the same as that external to the outer housing.

3,703,640

SIGNAL SPECTRAL MULTIPLEXING SYSTEM

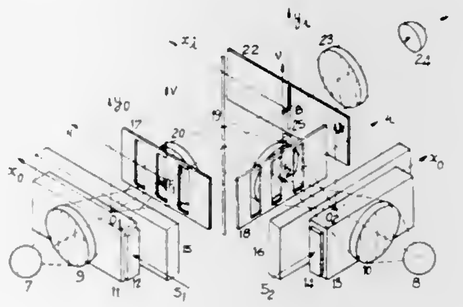
Georges Broussaud, and Serge Lowenthal, both of Paris, France, assignors to Thomson - CSF

Filed Dec. 8, 1969, Ser. No. 882,880

Claims priority, application France, Dec. 17, 1968, 68178663

Int. Cl. H04b *9/00*

U.S. Cl. 250—199 **27 Claims**



A double-diffraction optical system associated with a monochromatic light source, with optical-electrical modulating means and with photo-electric detector means, for effecting the interlaced spectral multiplexing or demultiplexing of a plurality of electrical signals.

3,703,641

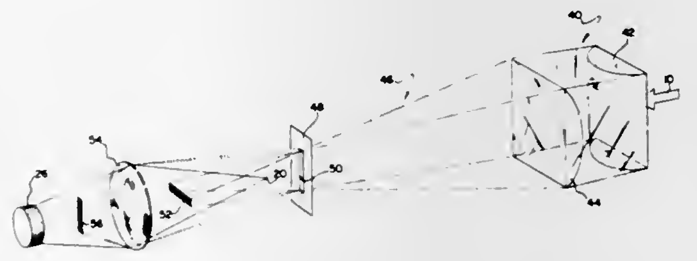
PARTICLE-SIZE MEASURING APPARATUS

Fred D. Rosen, La Habra Heights, Calif., assignor to North American Rockwell Corporation

Filed Aug. 18, 1969, Ser. No. 850,725

Int. Cl. G01n *1/00, 15/02, 21/00*

U.S. Cl. 250—218 **5 Claims**



This invention causes a particle to pass through an intense lightbeam, thus producing a diffraction pattern that is converted to an output signal corresponding to the particle-size. A plurality of lenses produces a minimal-size lightbeam that is blocked-out for normal states, but is permitted to produce an output signal at the presence of a particle. The optical arrangement also blocks-out lightbeams produced by dust, thus providing a better signal-to-noise ratio indication.

3,703,642

OUTBOARD MOTOR UNIT

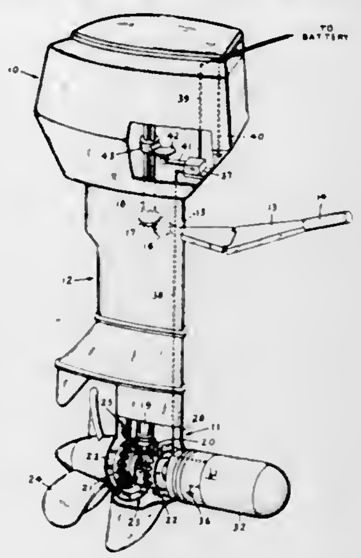
Rodolfo Rodriguez Balaguer, 2607 Grace Drive, Harbor Beach, Fort Lauderdale, Fla.

Filed Oct. 28, 1971, Ser. No. 193,353

Int. Cl. F03b *13/10*

U.S. Cl. 290—43 **6 Claims**

An outboard motor unit for use on small boats and having a primary propulsion engine connected through a clutch to the propeller shaft and an electric motor aligned with and connected to the propeller shaft. The electric motor is connected to a battery through a switch operatively connected to the engine throttle to complete the power connection for the electric motor when the throttle is at a selected proportion of full throttle. The electric motor operates as a motor when the engine is stopped and as a generator when the engine is running.



3,703,643

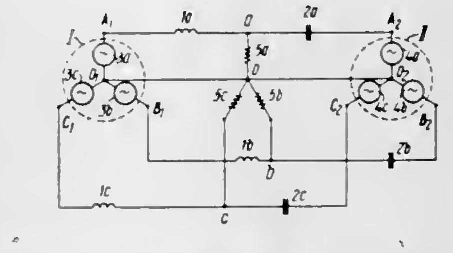
SUPPLY SOURCE FOR ELECTRICAL PLANTS, FURNISHING A CURRENT THE MAGNITUDE OF WHICH IS INDEPENDENT OF LOAD IMPEDANCE

Nikolai Fedotovich Ilinsky; Kirill Davidovich Gutterman, and Vadim Vladimirovich Mikhailov, all of Moscow, U.S.S.R., assignors to Moskovsky Ordena Levina Energetichesky Institut, Moscow, U.S.S.R.

Filed Feb. 25, 1971, Ser. No. 118,644

Int. Cl. H01j *3/38*

U.S. Cl. 307—52 **2 Claims**



Supply source for electrical plants, providing a current the magnitude of which is independent of load impedance, wherein the supply source is characterized in that it includes two voltage sources which are arranged whereby each may be regulated relative to the other, and wherein each is connected between one of two reactances and star connected with the load. The supply source enables the load current to be varied in any pre-determined manner for zero to a definite maximum value.

3,703,644

SYNCHRONIZING DEVICE

Kjeld Thorborg, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

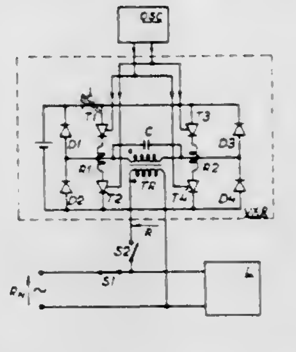
Filed March 9, 1972, Ser. No. 233,187

Claims priority, application Sweden, March 24, 1971, 3810/71

Int. Cl. H02j *7/00*

U.S. Cl. 307—64 **1 Claim**

A synchronizing device for achieving frequency and phase similarity between an output voltage from an inverter and the voltage from a second alternating voltage source includes an oscillator for delivering an output signal in the form of control pulses to the inverter, so that the input voltage of the inverter has a frequency corresponding to that of the control pulses. The second alternating voltage source supplies pulses to the oscillator to lock the output signal of the oscillator in frequency to the frequency of said alternating voltage source. The output signal of the oscillator is supplied to the inverter over a phase-shifting member. A phase-sensitive member is supplied with the output signal of the oscillator and the output of the inverter, and forms an analogue signal depending on the phase difference therebetween. This analogue signal is supplied to the phase-shifting member to affect the phase shifting so that the phase difference is steered towards zero.



3,703,645

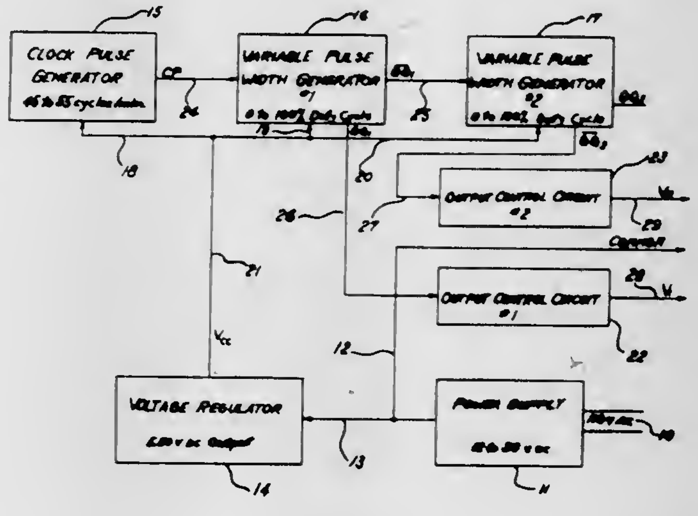
ELECTRONIC TIMING SYSTEM FOR MILKING

William C. Swift, P.O. Box 764, San Joaquin, Tex.

Filed Jan. 18, 1971, Ser. No. 107,111

Int. Cl. A01j *5/14*

U.S. Cl. 307—154 **8 Claims**

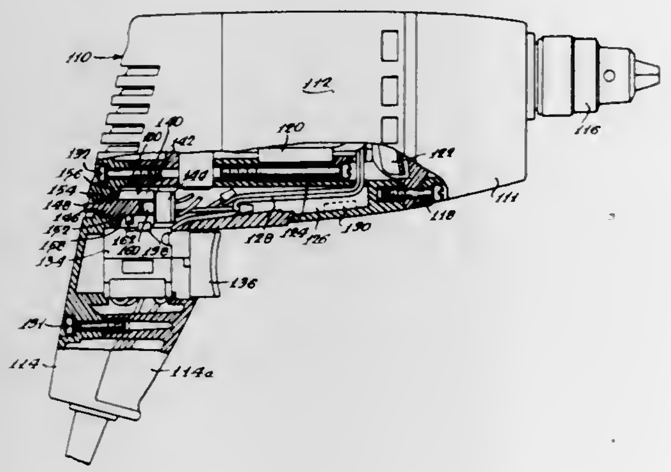


A system for electronically controlling milking machines is disclosed which includes a clock pulse generator employing a multivibrator circuit to provide a periodic series of stable rectangular pulses of controlled frequency in a given frequency range. Two variable pulse width generators are series coupled to the clock pulse generator. Each of these includes a one-shot or monostable multivibrator circuit for independently varying the output pulse width within a period as determined by the frequency of the clock pulse generator. In this manner, the milk ratio can be controlled at the front and rear solenoids of the milking machine pulsators and thus at the front and the rear teats of the cow being milked. The front and rear milk ratio controls are independent of each other. An output control circuit is connected to each of the variable pulse width generators for periodically turning the solenoids of the milking machine pulsators on and off according to a desired timing relationship.

A power supply, including a transformer and a rectifier, supplies a stepwise variable direct current voltage to a voltage regulator for supplying a constant voltage to the clock pulse generator and the two variable pulse width generators for stabilized pulse output isolated from variations in power input line voltages. The power supply also provides a common voltage between the solenoids of the milking machine pulsators and the two output control circuits.

3,703,646
ELECTRIC TOOL WITH TRIGGER SWITCH AND LOCK-OUT ARRANGEMENT

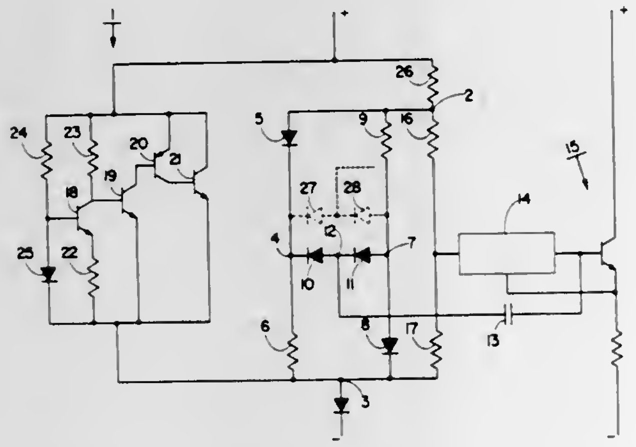
Anthony Jacyno, Aurora, Ill., assignor to G. W. Murphy Industries, Inc., Portable Electric Tool Division, Houston, Tex.
Continuation of Ser. No. 800,526, Feb. 26, 1969, abandoned. This application Dec. 11, 1970, Ser. No. 97,306
Int. Cl. H02k *11/00*
U.S. Cl. 310—47 **3 Claims**



The disclosure describes a portable electric tool having an on-off trigger switch and a motor reversing switch. The actuators for the two switches are so interlocked as to prevent the tool from being reversed while the tool is running. The tool housing has a separate integral cavity adjacent to the moving parts of the tool, such as the motor, for containing wires or solid state control devices and positively protects said wires or devices against physical or mechanical damage from the motor or related parts.

3,703,647
VOLTAGE CLIPPING CIRCUIT

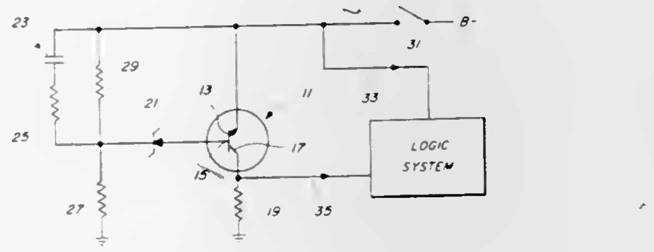
Michael C. J. Cowpland, Ottawa, Ontario, Canada, assignor to Microsystems International Limited, Ottawa, Ontario, Canada
Filed Dec. 14, 1970, Ser. No. 97,547
Claims priority, application Canada, Dec. 10, 1970, 100,304
Int. Cl. H03k *17/00*
U.S. Cl. 307—237 **6 Claims**



A temperature-stable voltage clipping circuit, in which changes in voltage clipping levels caused by temperature-induced variation in the transfer characteristics of the clipping diodes are cancelled out.

3,703,648
RESET CIRCUIT FOR LOGIC SYSTEM IN QUIESCENT STATE FOR A PREDETERMINED TIME UPON APPLICATION OF POWER AND UPON POWER FLUCTUATIONS BELOW A PREDETERMINED LEVEL

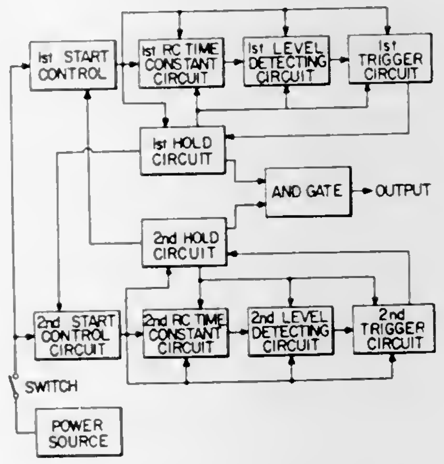
James A. Wrabel, Chicago, Ill., assignor to The Seeburg Corporation of Delaware, Chicago, Ill.
Filed Sept. 11, 1970, Ser. No. 71,621
Int. Cl. H03k *5/13*
U.S. Cl. 307—293 **2 Claims**



A Zener diode is placed in series with the base of a transistor, which provides a reset signal when not conducting, to prevent conduction of the transistor until the breakdown voltage of the Zener is exceeded. An RC charging circuit is utilized to delay breakdown of the Zener diode for a specified time period after application of power to the system.

3,703,649
TIMER FOR A CAMERA

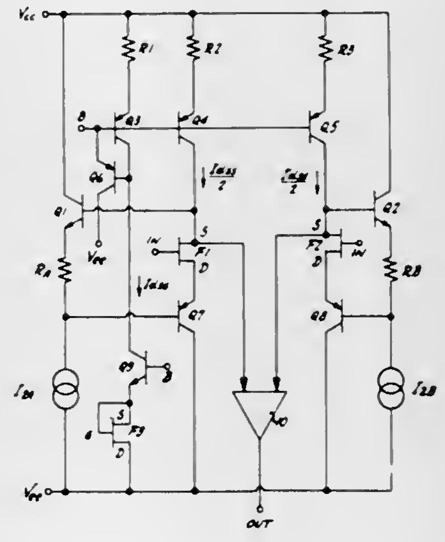
Osamu Maida, Tokyo, Japan, assignor to Nippon Kogaku, K.K., Tokyo, Japan
Filed Sept. 29, 1971, Ser. No. 184,781
Claims priority, application Japan, Sept. 30, 1970, 45/85415
Int. Cl. H03k *5/13*
U.S. Cl. 307—293 **10 Claims**


1st START CONTROL
1st RC TIME CONSTANT CIRCUIT
1st LEVEL DETECTING CIRCUIT
1st TRIGGER CIRCUIT
1st HOLD CIRCUIT
AND GATE
OUTPUT
2nd HOLD CIRCUIT
2nd START CONTROL CIRCUIT
2nd RC TIME CONSTANT CIRCUIT
2nd LEVEL DETECTING CIRCUIT
2nd TRIGGER CIRCUIT
SWITCH
POWER SOURCE

A timer circuit for actuating a camera including first and second timing circuits and first and second start control circuits. Each timing circuit consists of an integration time constant circuit having a resistor and a capacitor connected in series, a level detecting and trigger circuit and a hold circuit. The first and second start control circuits are interconnected between a power source and the first and second timing circuits, respectively, in such a manner that each start control circuit is connected or disconnected by a control signal derived from the other start control circuit. The timing circuits are alternately actuated by said start control circuits, and the outputs from the two timing circuits are applied to an AND gate to generate an actuating signal for controlling the camera. Switches are provided in the timer circuit so as to selectively establish said timer circuit in one of various modes of operation.

3,703,650
INTEGRATED CIRCUIT WITH TEMPERATURE COMPENSATION FOR A FIELD EFFECT TRANSISTOR

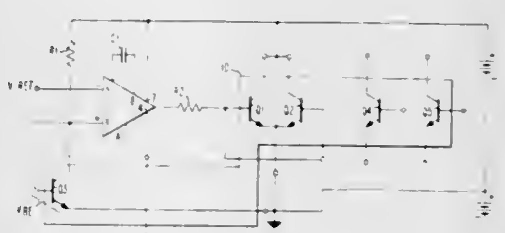
Larry J. Kendall, Concord, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.
Filed Sept. 16, 1971, Ser. No. 181,090
Int. Cl. H03k *23/08*
U.S. Cl. 307—310 **5 Claims**



An integrated circuit with temperature compensation being provided for field effect transistors by a matched FET which provides an I_{dss} which varies with temperature and which determines the drain current of the temperature compensated field effect transistors.

3,703,651
TEMPERATURE-CONTROLLED INTEGRATED CIRCUITS

William L. Blowers, Newburgh, N.Y., assignor to Kollmorgen Corporation, Hartford, Conn.
Filed July 12, 1971, Ser. No. 161,512
Int. Cl. H01l *1/24*
U.S. Cl. 307—310 **2 Claims**



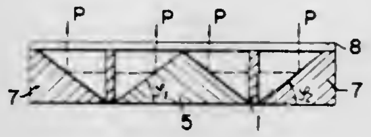
An integrated circuit comprising several transistors on a chip is maintained at a constant temperature by utilizing certain of the transistors as heating elements and other transistors as temperature sensors in a closed loop feedback network. The remaining transistors—not thus utilized for temperature regulation and sensing are available for use in work circuits where sensitivity to ambient temperature variations or self-heating present design problems.

ERRATUM

For Class 310—47 see:
Patent No. 3,703,646

3,703,652
ELECTROACOUSTIC TRANSDUCER

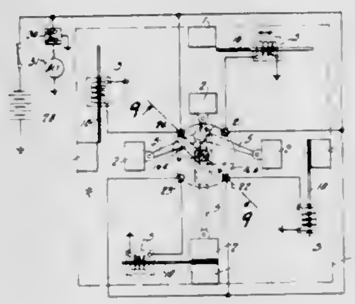
Masahiro Noda, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 22, 1971, Ser. No. 117,619
Claims priority, application Japan, Feb. 25, 1970, 45/16082
Int. Cl. H04r *17/00*
U.S. Cl. 310—8.3 **3 Claims**



An electroacoustic transducer includes an electroacoustic transducer element and inner and outer acoustical reflection plates respectively positioned within an exterior to the transducer element. The electroacoustic transducer element emits an acoustic signal, such as an ultrasonic wave, from both the inner and outer surfaces of the element by expansion and contraction oscillations caused by an electrical signal applied thereto. Similarly, the transducer element can generate an electrical signal by applying an acoustical oscillation thereto. The inner and outer acoustical reflection plates will reflect acoustic oscillations emitted from the inner and outer surfaces in an axial direction in such a manner that a variable range of directivity may be realized and a high acoustic output obtained. The acoustic reflection plates are provided at suitable inclined angles so that the phases of acoustic oscillations emitted in the radial direction from both the inner and outer surfaces of the cylindrically shaped element of the electroacoustic transducer will essentially coincide.

3,703,653
RECIPROCATING MOTOR WITH MOTION CONVERSION MEANS

Robert D. Tracy, 1506 West Chicago Avenue, South Milwaukee, Wis., and David J. Derouin, 12045 West St. Martin Road, Franklin, Wis.
Filed June 9, 1971, Ser. No. 151,462
Int. Cl. H02k *7/06*
U.S. Cl. 310—24 **6 Claims**

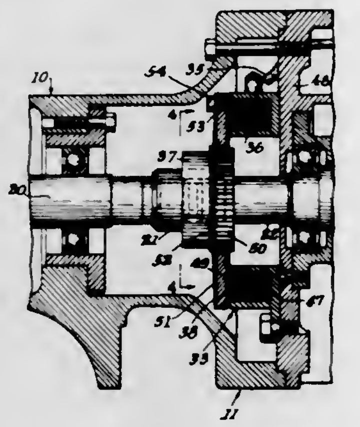


A permanent magnet motor which utilizes pairs of permanent magnets as the power source for the motor. The magnets of each pair are arranged with their like poles adjacent one another so that normally the magnets of the pairs oppose or repel one another. Shiftable means are provided for being inserted between the magnets of each pair so as to then to alter the magnetic field between the magnets to cause the magnets to move toward one another with considerable force. One magnet of each pair is connected to a common drive shaft member. The shiftable means for being inserted between and withdrawn from the magnets of each pair are shifted by any suitable means in timed relationship with one another.

3,703,654

HAND TOOL WITH MAGNETIC BRAKE

Ralph Karubian, 2001 West Gage Avenue, Los Angeles, Calif.
Filed June 30, 1971, Ser. No. 158,268
Int. Cl. H02k *7/10*
U.S. Cl. 310—77 **5 Claims**

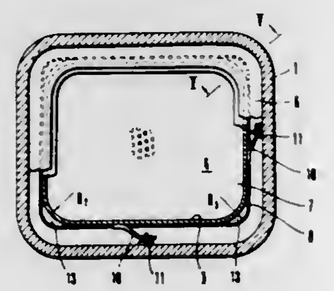


A hand tool having a motor-operated shaft that drives a saw, the motor being rendered operable when pressure is applied to a trigger while a tool-manipulating handle is being grasped. Said tool is provided with a magnetic brake that comprises an electro-magnetic coil affixed to the housing of the tool and an armature normally biased away from the coil carried by and rotatable with the shaft, the coil remaining de-energized during operation of the shaft and saw. Said actuator, upon release of the trigger, shifting a switch to cause de-energization of the motor and energization of the electro-magnetic coil to produce a magnetic field effective on the armature to draw it into braking engagement with a brake lining provided adjacent the coil.

3,703,655

COLOR CATHODE RAY TUBES OF THE SHADOW MASK TYPE

Takao Kawamura, Chiba-ken, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 7, 1971, Ser. No. 104,561
Claims priority, application Japan, Jan. 7, 1970, 45/2147
Int. Cl. H01j *29/46, 29/56*
U.S. Cl. 313—85 S **7 Claims**



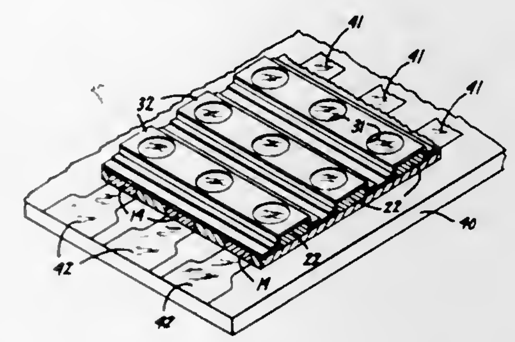
In a color cathode ray tube including a shadow mask assembly comprising an interfitted rectangular shadow mask and supporting frame, each having four rounded corners, the radius of curvature of the four rounded corners of the side wall of the shadow mask is made smaller than that of the four rounded corners of the supporting frame.

3,703,656

MONOLITHIC SEMICONDUCTOR DISPLAY DEVICES

Allen M. Barnett; Simeon V. Galginaitis, both of Schenectady, and Frederick K. Heumann, Burnt Hills, all of N.Y., assignors to General Electric Company
Filed Feb. 17, 1971, Ser. No. 116,005
Int. Cl. H01j *1/62*
U.S. Cl. 313—108 D **11 Claims**

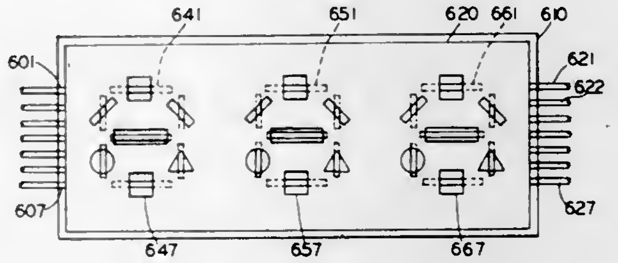
Monolithic semiconductor arrays of light-emitting diodes and methods for making them on optically transparent semi-insulating substrates, for example, with means for providing optical isolation between adjacent diodes are described. In one embodiment, a monolithic matrix-addressable alphanumeric display device is formed by selective liquid epitaxial growth of n- and p-type gallium phosphide semiconductor material on a semi-insulating substrate of gallium phosphide, for example. Optical isolation between adjacent diodes is provided by metallic films alloyed into the major surfaces of the substrate. These metallic films also provide electrical contact to the n- and p-type regions for addressing the display device.



3,703,657

VARIABLE PATTERN GASEOUS DISPLAY PANEL HAVING SEGMENTED CATHODE ELECTRODES

Arthur B. Shesser, Plainfield, N.J., assignor to Burroughs Corporation, Detroit, Mich.
Continuation-in-part of Ser. No. 45,200, June 10, 1970, abandoned. This application Feb. 11, 1971, Ser. No. 114,595
Int. Cl. H01j *61/30, 61/66*
U.S. Cl. 313—109.5 **17 Claims**



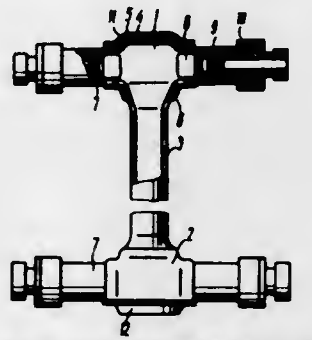
Display devices adapted to display one or more patterns, symbols, or portions of patterns side-by-side in one or more rows and including a multiple-pattern template in combination with a multiple-segment information display panel. Such display devices may include a plurality of elongated conductors each carrying a plurality of cathode electrode segments disposed along the length of the conductors in the panel, one at each display position, and an anode electrode associated with each group of cathode segments. At each display position, the cathode segments can be selectively energized to display selected patterns or any desired portions of the patterns or symbols provided by the template format.

3,703,658

GAS-DYNAMIC DISCHARGE LIGHT SOURCE

Viktor Viktorovich Sysun, korpus 707, kv. 71; Boris Vasilievich Skvortsov, korpus 511, kv. 58; Jury Georgievich Basov, korpus 309, kv. 32, and Vladimir Ivanovich Roldugin, korpus 347, kv. 34, all of Moscow, U.S.S.R.
Filed Dec. 3, 1970, Ser. No. 94,744
Claims priority, application U.S.S.R.. Dec. 24, 1969, 1388550
Int. Cl. H01j *61/30, 61/40*
U.S. Cl. 313—113 **8 Claims**

The present invention relates to light-source in which light emission in the optical wavelength range is produced by moving shock waves and plasma streams. According to the invention, a gas-dynamic discharge light-source comprises at least two gas-filled discharge chambers interconnected by a tube in which shock waves and the gas-discharge plasma are propagated. On the outside, the discharge chambers have current-carrying buses each of which is series-connected with the discharge gap of the respective discharge chamber.

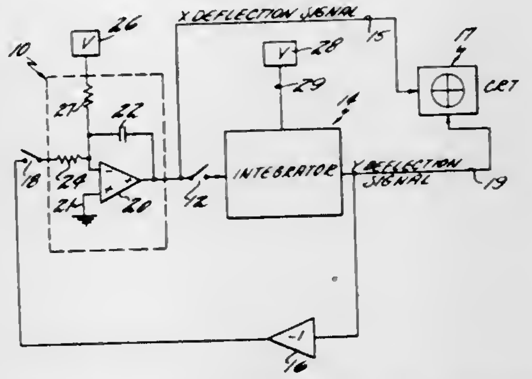


The light source according to the invention is intended to produce strong recurrent light flashes of short duration, for use mainly in the optical pumping of active media, predominantly liquid-type lasers based on organic dyestuffs.

3,703,659

STROKE WRITE SYMBOL GENERATOR

Glenn C. Waehner, Scarsdale, N.Y., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Dec. 24, 1970, Ser. No. 101,236
Int. Cl. H01j *29/70*
U.S. Cl. 315—24 **1 Claim**

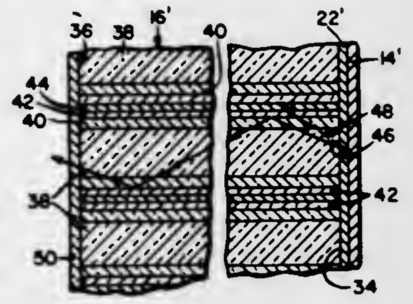


A stroke generator in a CRT display uses two integrators to generate straight lines for X and Y deflections respectively, and uses the same two integrators connected by simple switches as a harmonic oscillator to generate circular arcs.

3,703,660

PHOTOCHROMIC FIBER OPTIC IMAGE STORAGE DEVICE

Norman F. Fyler, Deerfield, Ill., assignor to Corning Glass Works, Corning, N.Y.
Filed Aug. 19, 1971, Ser. No. 173,180
Int. Cl. G02b *5/16;* **H01j** *29/14, 31/10*
U.S. Cl. 313—92 LF **25 Claims**

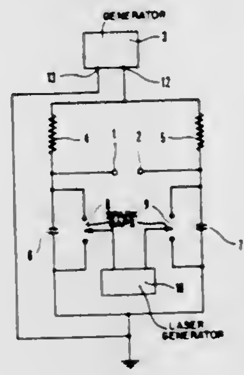


Disclosed is a fiber optic image storage device of the type having a plurality of light-conducting optical fibers secured together in side-by-side relation so that corresponding opposite ends of the fibers cooperate to define first and second faces. Each of the fibers is characterized in that it comprises a glass core and a layer of photochromic glass formed upon the surface of the core. The layer of photochromic glass may function as a sheath having a refractive index substantially the same as that of the core, or it may have a refractive index lower than that of the core thereby forming with the core a light reflecting interface. The core may consist of a photochromic glass or a non-absorbing glass.

3,703,661

GENERATOR FOR DELIVERING VERY-HIGH-VOLTAGE SQUARE-TOPPED PULSES

Denis Le Goff, Enghien, France, assignor to Commissariat A L'Energie Atomique, Paris, France
Filed May 24, 1971, Ser. No. 146,131
Claims priority, application France, May 28, 1970, 7019553
Int. Cl. H01t *15/00;* **H03k** *3/53*
U.S. Cl. 315—155 **5 Claims**



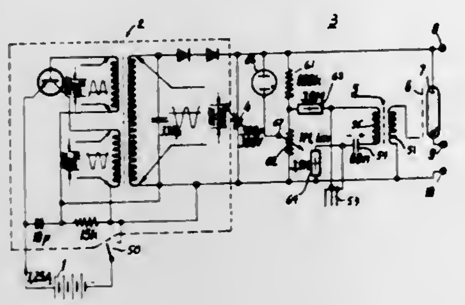
A square-topped voltage pulse having a very fast rise time and fall time is obtained between the two terminals of a load by means of a generator comprising a first and a second voltage source which remain connected to the two terminals and two devices for rapid circuit-closure which are connected between ground and said terminals and at least one of which consists of a spark-gap, said two terminals being connected to ground in succession.

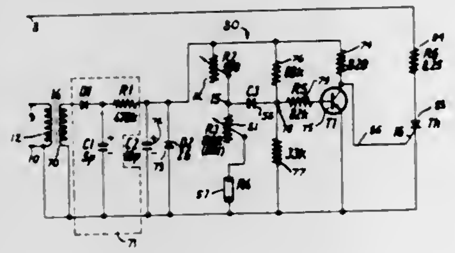
3,703,662

HIGH SPEED QUENCHING ARRANGEMENT FOR A FLASH DEVICE

Rolf Dieter Dennewitz, and Lutz Breitkreuz, both of Berlin, Germany, assignors to Loewe Opta G.m.b.H., Berlin, Germany
Filed Dec. 5, 1969, Ser. No. 882,689
Claims priority, application Germany, Dec. 11, 1968, P 18 14 856.5
Int. Cl. H05b *37/02*
U.S. Cl. 315—159 **3 Claims**

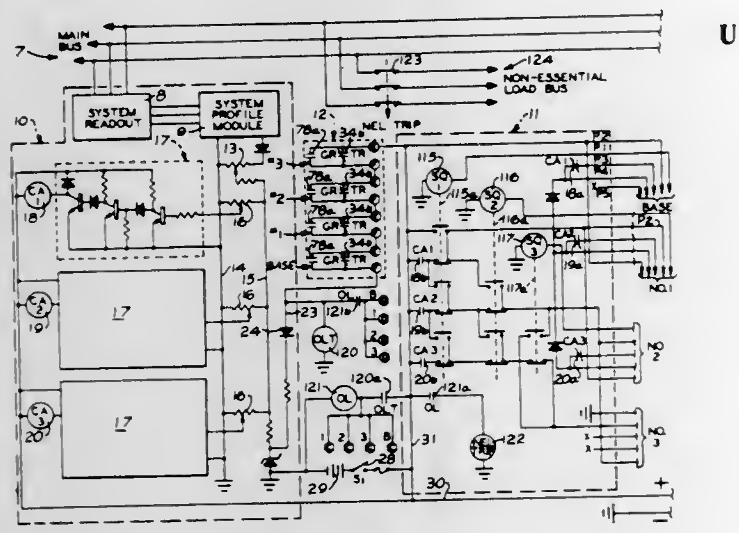
A pulsed flash unit is provided with a photoelectrically controlled, interruptible thyristor gate whose transconductive path is connected in shunt with the flash tube for instantaneously quenching the light output from the flash tube when a predetermined quantity of emitted light has been monitored and integrated by the unit. A threshold-regulated transistor coupled to the output of the light integrator supplies a two-state control voltage to the control electrode of the thyristor so that the latter selectively provides a short and an open circuit across the flash tube.





3,703,663
CONTROL SYSTEM FOR ADDING AND REMOVING ALTERNATORS FROM A SYSTEM

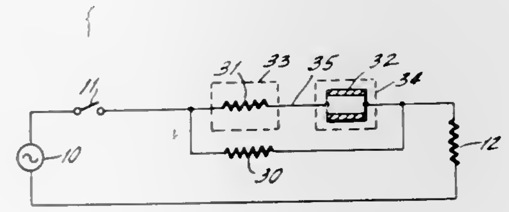
Harold H. Wagner, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Sept. 10, 1971, Ser. No. 179,282
Int. Cl. H02h *7/06*
U.S. Cl. 317—13 R **8 Claims**



An automatic control system for a plurality of engine powered alternator units arranged to supply a common electrical distribution system wherein the alternators are driven by speed governed engines which employs circuitry which adds or removes units as the electrical load varies, calls all non-operating units when an overload is approached and removes any malfunctioning alternator unit due to mechanical and/or electrical malfunctions in the unit by employing voltage signals from commercial load profile modules for control functions and voltage signals from the engine governors.

3,703,664
FAULT CURRENT LIMITER USING SUPERCONDUCTIVE ELEMENT

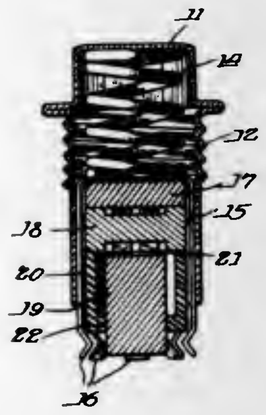
John C. Cronin, Greensburg, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.
Filed Oct. 5, 1970, Ser. No. 77,837
Int. Cl. H02h *9/02*
U.S. Cl. 317—20 **5 Claims**



A superconductive impedance element is connected in parallel with a conventional impedance element and is switched from essentially zero impedance to a high impedance during switching operation, thereby to connect the conventional impedance in the circuit to limit the current in the circuit. The impedances switched into the circuit are inductively associated with the superconductive element. A pilot superconductive element is disclosed for the high accuracy switching of a main superconductive element.

3,703,665
ELECTRIC OVERVOLTAGE ARRESTERS WITH IMPROVED ELECTRODE DESIGN

Robert A. Yereance, Columbus, and Harold W. Erlenbach, Jr., Franklin, both of Ohio, assignors to Cook Electric Company, Morton Grove, Ill.
Continuation of Ser. No. 866,656, Oct. 15, 1969, abandoned. This application Oct. 8, 1970, Ser. No. 79,341
Int. Cl. H02h *1/04*
U.S. Cl. 317—61 **13 Claims**

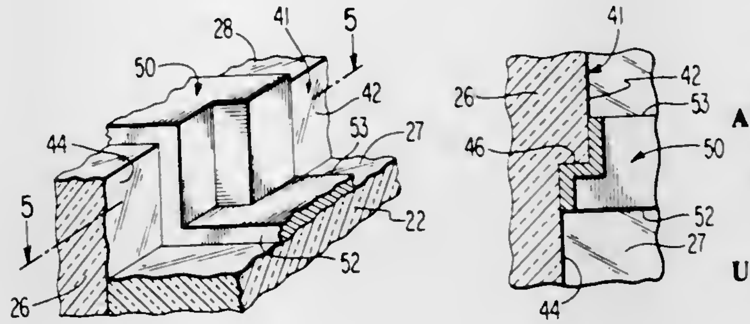


An electric overvoltage arrester having a housing, a pair of spaced carbon electrodes, an annular insulating spacer within the housing and an assembly carried by the housing to hold the electrodes and spacer within the housing is provided for use in protecting electrical transmission lines from in-line voltage surges. One of the electrodes is recessed within the annular insulating spacer to define a gap distance between the opposing faces of the electrodes and the second electrode has a plurality of grooves cut in its upper and lower surfaces to define a pattern of grooves and plateau areas.

3,703,666
Patent Not Issued For This Number

3,703,667
SHAPED RISER ON SUBSTRATE STEP FOR PROMOTING METAL FILM CONTINUITY

Andrew Gordon Francis Dingwall, Somerset, N.J., assignor to RCA Corporation
Filed March 17, 1971, Ser. No. 125,302
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R **11 Claims**

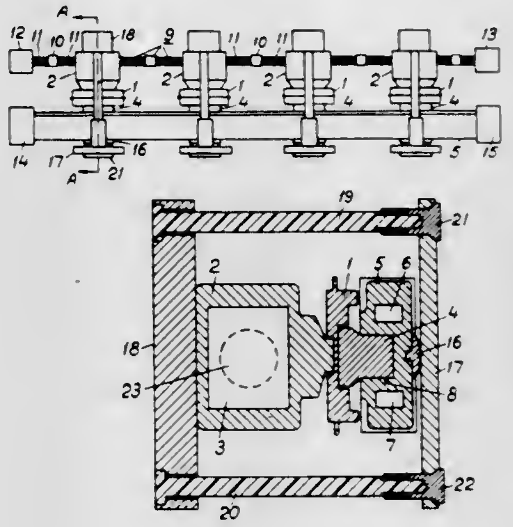


In integrated circuit devices which have insulating coatings with portions of different thickness bounded by relatively high steps and deposited metal conductors on the coatings, yield losses often result from breaks in the metal conductors at the steps. By shaping the insulator step with an offset wherever a metal crossing is required, the probability of such breaks is reduced.

3,703,668
SEMICONDUCTOR DEVICE WITH SEMICONDUCTOR ELEMENTS ARRANGED SIDE BY SIDE AND PROVIDED WITH HOLLOW COOLING BODIES

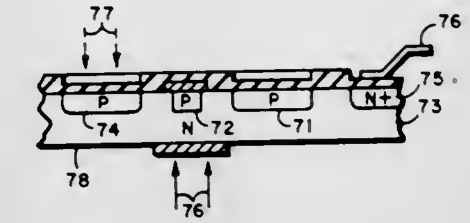
Per-Ake Bylund; Tibor Farkas, and Nils Eric Andersson, all of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Continuation-in-part of Ser. No. 121,978, March 8, 1971, abandoned. This application July 9, 1971, Ser. No. 161,199
Claims priority, application Sweden, March 23, 1970, 3973/70
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R **3 Claims**

A semiconductor device comprises semiconductor elements arranged side by side and provided with hollow cooling bodies. The cooling bodies are joined to each other by a connection conduit for the coolant which is flexible and which insulates the cooling bodies from each other electrically. The connection conduit comprises a tube of insulating inorganic material and a bellows of metallic material fixed to each end of the tube.



3,703,669
PHOTOCURRENT CROSS TALK ISOLATION

Arnold London, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Continuation of Ser. No. 797,202, Feb. 6, 1969, abandoned. This application Aug. 12, 1971, Ser. No. 171,300
Int. Cl. H01l *15/00*
U.S. Cl. 317—235 R **10 Claims**



A monolithic photoresponsive array having a plurality of spaced-apart photocurrent collecting regions (photocells) extending into a semiconductor substrate from one major surface. Cross talk caused by lateral flowing of photocurrents between the various photocurrent collecting regions is substantially decreased (such decrease termed photocurrent isolation) by establishing a concentration of minority carriers effectively intermediate the photocurrent collecting regions which is substantially lower than the minority carrier concentration of the semiconductor material in which such photocurrents are flowing. In one embodiment, a region having the same conductivity type as the various photocurrent collecting regions is disposed between adjacent ones thereof and is short-circuited to the substrate such that the minority carrier concentration adjacent the shorted junction is equal to the thermal equilibrium minority carrier concentration. Such photocurrent isolation may be provided within islands of an integrated circuit die or chip having a plurality of such photocurrent collecting regions. Groups of such photocurrent collecting regions may be electrically isolated as by dielectric isolation or through junction isolation.

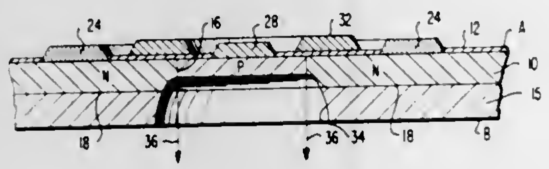
3,703,670
ELECTROLUMINESCENT DIODE CONFIGURATION AND METHOD OF FORMING THE SAME

Hans J. Kunz, Raleigh, N.C., assignor to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 803,216, Feb. 28, 1969, Pat. No. 3,667,117. This application Nov. 12, 1970, Ser. No. 89,015

Int. Cl. H01l *15/00*

U.S. Cl. 317—235 R **7 Claims**



An electroluminescent diode which includes an electromagnetic radiation emitting PN junction formed by diffusing, into both surfaces of a semiconductor slice of a first conductivity, a dopant material of opposite type conductivity. Contact metallizations are mounted within windows in an insulating barrier which covers said diode so as to form electrical contacts engaging both the N and P type areas of the diode. An annular reflector metallization pad is mounted on the surface of the device over the PN junction and spaced from one surface of the semiconductor material by the insulating coating so as to reflect light out through the surface opposite to that on which an anti-reflection coating has been placed.

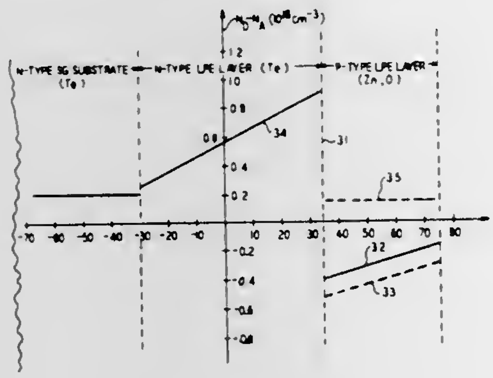
3,703,671
ELECTROLUMINESCENT DEVICF

Robert H. Saul, 1 Clinton Lane, Scotch Plains, N.J.

Division of Ser. No. 848,546, Aug. 8, 1969. This application March 10, 1972, Ser. No. 233,680

Int. Cl. H01l *15/00*

U.S. Cl. 317—235 R **2 Claims**



The efficiency of gallium phosphide electroluminescent devices, emitting light in the red region of the spectrum, produced by the liquid phase epitaxial deposition of p-type material on an n-type substrate depends in part on the concentration of zinc and oxygen in the gallium solvent used in the deposition and on the heat treatment after deposition. It has been found that inclusion in the gallium of 0.03 mole percent zinc and 0.35 mole percent Ga_2O_3 lead to the production of mounted devices of greater than 6 percent photon efficiency when junction formation is followed by a suitable heat treating schedule.

3,703,672
THREE-PHASE INDUCTION-MOTOR, SPEED-CHANGING METHOD AND CONTROL CIRCUIT

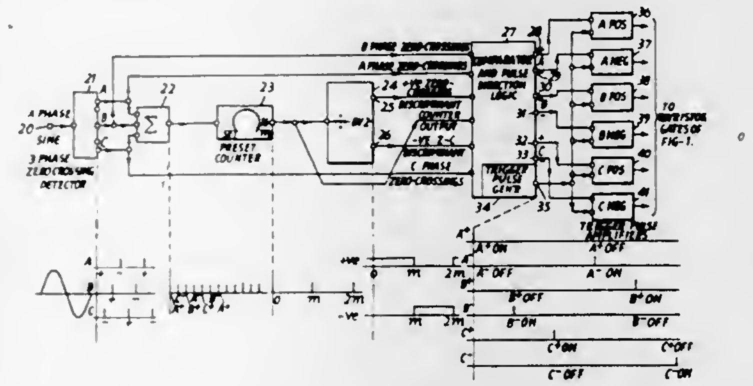
Brian Michael Bird, and Gordon Hindle Rawcliffe, both of Bristol, England, assignors to National Research Development Corporation

Filed April 26, 1971, Ser. No. 137,533

Claims priority, application Great Britain, May 5, 1970, 21,653/70

Int. Cl. H02p *5/40*

U.S. Cl. 318—227 **16 Claims**



A method of changing the speed of a three-phase induction motor by deriving from the A.C. supply a modulating wave of sub-multiple frequency, deriving therefrom a corresponding rectangular wave, modulating each phase of the supply by three such modulating waves, with the same sequence or opposite sequence to the supply phases. Modulation of the supply is effected by gating thyristors from the modulating waves. By varying the modulation frequency, the motor speed is varied stepwise over a speed range.

3,703,673
POWER DRIVEN POSITIONING APPARATUS WITH FORCE DEPENDENT SHUT-OFF, TO POSITION AN ENGAGEMENT ELEMENT AGAINST AN ABUTMENT

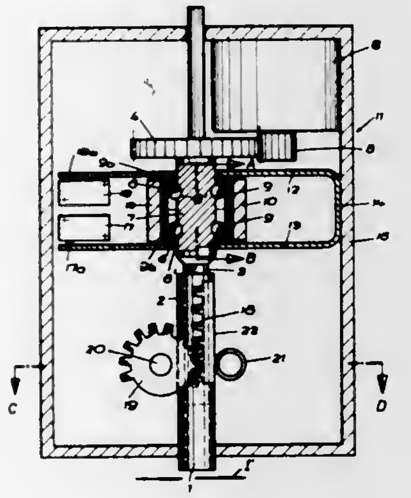
Jurgen Balz, Heilbronn, Neckar, Germany, assignor to Firma Helmut Balz GmbH, Heilbronn, Neckar, Germany

Filed Nov. 19, 1971, Ser. No. 200,453

Claims priority, application Germany, July 14, 1971, P 21 35 094.7

Int. Cl. H02p *3/00*

U.S. Cl. 318—468 **10 Claims**



A housing, preferably separable into shells encloses a generally U-shaped leaf spring, having projecting legs extending into the housing. A spindle passes through the projecting legs, the spindle being motor driven and connected by threads with the engagement element to provide axial movement of the engagement element upon rotation of the spindle. The spindle is guided in the housing by a sleeve formed in the housing which surrounds axially movable bearings. The bearings are held in axial position by the leg portions of the U-shaped spring, but following axial excursion of the spindle, if the engagement element connected thereto strikes an abutment, causing deflection of the leaf spring and operation of electrical switches as the leg portions of the leaf springs deflect.

3,703,674
LINE FOLLOWING

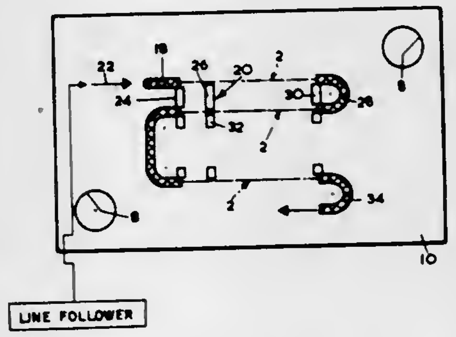
Brian Cecil Doxey, Welwyn, England, assignor to The British Oxygen Company Limited, London, England

Filed Nov. 9, 1970, Ser. No. 88,151

Claims priority, application Great Britain, Nov. 14, 1969, 56,000/69

Int. Cl. G05b *19/36*

U.S. Cl. 318—577 **4 Claims**



In a method of following a line or silhouette pattern photoelectrically, in order to control associated cutting or other equipment corners or crossovers which are unable to be traced accurately in one pass are traced in two or more passes with the aid of masks positioned in succession over the pattern. Each mask has on it additional paths or blanking portions or both to convert each corner or crossover on the pattern into an unambiguous path of curvature small enough to be followed accurately. The associated equipment is inhibited as the additional paths are followed.

3,703,675
FLOATING BATTERY CHARGING NETWORK

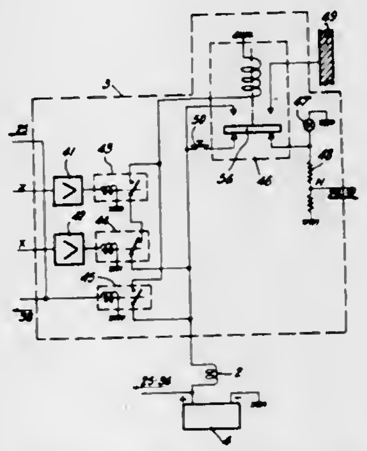
Andre A. L. Alric; Gilbert R. A. Porte; Joseph M. H. Glotin; Francis J. Higounenq, all of Hte Garonne, and Serge P. Boussin, Cordeille-Cornebarieu, all of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Feb. 17, 1971, Ser. No. 116,175

Claims priority, application France, Feb. 25, 1970, 7006723

Int. Cl. H02j *7/34*

U.S. Cl. 320—31 **27 Claims**



Method and apparatus for charging storage batteries and discharging same into a network through a contactor controlled by comparing network voltage with a reference voltage and battery off-load voltage with a reference voltage and a clock to cut off charging after a predetermined time to limit battery charge to 95% of its rated capacity.

3,703,676
INVERTER

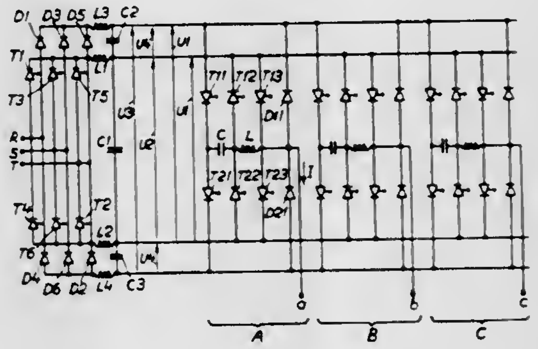
Kjell Frank, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed May 7, 1971, Ser. No. 141,177

Claims priority, application Sweden, May 15, 1970, 6688/70; Dec. 16, 1970, 17026/70

Int. Cl. H02m *7/48*

U.S. Cl. 321—5 **2 Claims**



An inverter has a connection group arranged to be fed with DC voltage and which includes two controlled main rectifiers in series with each other connected to the DC source and a connection point between which forms the output terminal for the output voltage of the inverter. These rectifiers are fired alternately. Two controlled commutating rectifiers in series are arranged to be supplied with DC voltage and are fired alternately in order to extinguish the main rectifiers. A commutating capacitor and a reactance are connected in series between the connection point of the main rectifiers and a point between the commutating rectifiers. An inductive element is connected with the capacitor to form an oscillating circuit so as to recharge the capacitor at each commutation. A series connection including the commutating rectifiers is supplied with positive and negative DC voltage of higher and lower potential respectively than that of the positive and negative poles of the first DC source. A limiting rectifier having such polarity that it is made reverse blocking by the voltage of the first DC source is connected between each pole of the first DC source and the terminal of the commutating capacitor facing the AC output.

3,703,677
FLUORESCENT LAMP INVERTER CIRCUIT

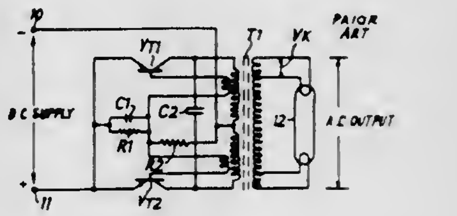
Victor Farrow, London, England, assignor to Thorn Electronics Limited, London, England

Filed June 19, 1968, Ser. No. 738,165

Claims priority, application Great Britain, Aug. 11, 1967, 37,083/67

Int. Cl. H02m *7/52*

U.S. Cl. 321—45 R **1 Claim**



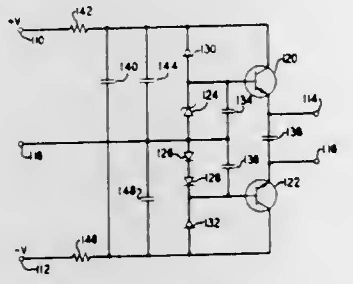
There is disclosed an inverter circuit particularly, but not exclusively, for operating fluorescent lamps. This circuit has a transformer to the primary of which is to be supplied a periodically switched D.C., a load being connected across the secondary. The transformer has an annular core having at least one air gap in it and two limbs projecting towards one another from opposing parts of the annulus and separated by an air gap. The primary and secondary windings surround the annulus on opposite sides of the limbs.

3,703,678
ISOLATING POWER SUPPLY

David Reis Weller, Bernardsville, N.J., assignor to Bell Telephone Laboratories, Inc., Murray Hill, Berkeley Heights, N.J.

Filed May 12, 1971, Ser. No. 142,628
Int. Cl. G05f *3/14*

U.S. Cl. 323—19 **4 Claims**



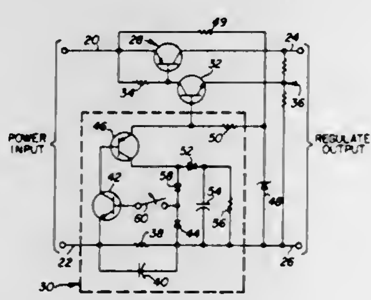
An isolating power supply having direct-current power as its input and providing a direct-current output having a ground that is independent of the input power lines.

3,703,679
CURRENT REGULATOR WITH DELAYED TURN-OFF

Marvin W. Heidt, Marion, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed Oct. 28, 1971, Ser. No. 193,296
Claims priority, application Sweden, Feb. 9, 1970, 1580/70
Int. Cl. G05f *1/58*

U.S. Cl. 323—9 **5 Claims**



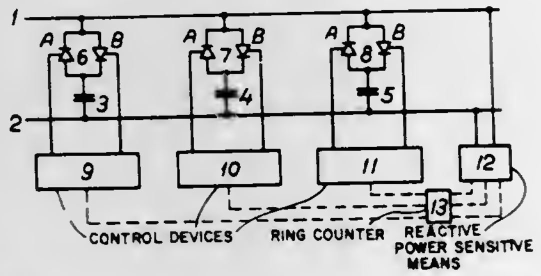
A voltage regulator with delayed current turn-off characteristics particularly useful with capacitive loads and including a load current control transistor, control circuitry for the current control transistor, and load current sensing circuitry the control circuitry being responsive to excess load current and biasing the load current control transistor to limit current. Transistor circuitry is provided within the control circuitry whereby continued excess current for a predetermined period of time will remove the power supply by interrupting the current to the load.

3,703,680
CAPACITOR BANK FOR AC NETWORKS

Kjell Frank, and Lennart Johansson, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Feb. 8, 1971, Ser. No. 113,316
Claims priority, application Sweden, Feb. 9, 1970, 1580/70
Int. Cl. G05f *1/68*

U.S. Cl. 323—101 **8 Claims**



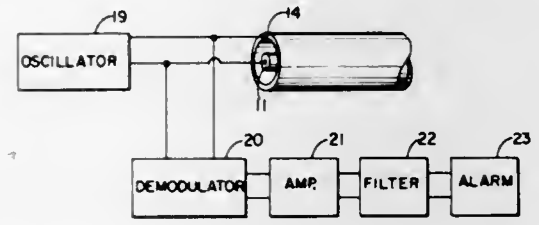
A capacitor bank for alternating current networks has a number of parallel branches each of which is connected by antiparallel-connected thyristors to the network. There is a control device for each thyristor which, when the bank is fully loaded, connects the thyristors in one conducting direction or the other in synchronism with the maximum of the network voltage in such direction. Each branch of the bank can be recharged by the full load during each half-period of the network voltage. Upon the occurrence of reduced load on the bank, the control devices emit current pulses to connect the thyristor switches in one direction or the other of the maxima of the network voltage in such direction for recharging. These latter pulses are emitted at a frequency which is substantially less thaN the network frequency.

3,703,681
THIN FILM LINE SENSOR FOR MEASURING MAGNETIC FIELDS, PRESSURE, VIBRATION OR PHYSICAL DISPLACEMENT

Gary N. Johnson, Rapid City, S. Dak., and Larry E. Wilson, Excelsior, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 14, 1971, Ser. No. 143,548
Int. Cl. G01r *33/02*

U.S. Cl. 324—43 R **10 Claims**



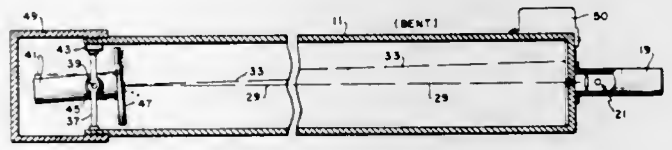
A line sensor which utilizes a ferromagnetic coated conductor in combination with another conductor in a line transducer. The line sensor is responsive to stress and to the ambient magnetic field. The impedance of the line transducer varies in accordance with the stress thereon and also in accordance with changes in the ambient magnetic field. A driving signal is introduced into the line transducer and a monitoring circuit detects the variations in the impedance of the line transducer. This enables the line sensor to indicate either individually or in combination disturbances in the ambient magnetic field, seismic movement, and differential displacement of the line transducer due to pressure upon the medium containing the line transducer.

3,703,682
LONG AXIS GRADIOMETER

Miles X. Wickman, Edgewater, and Harold P. Cohn, Shadyside, both of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Oct. 30, 1968, Ser. No. 771,800
Int. Cl. G01r *33/02;* **G01b** *11/26*

U.S. Cl. 324—43 R **5 Claims**



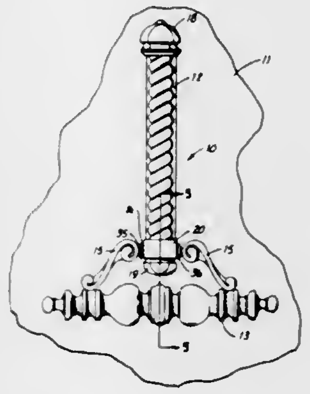
A gradiometer has two magnetometers axially spaced apart by an internally non-reflecting tube. One magnetometer is attached to a light source fixed centrally of a photo multiplier array at one end of the tube. The source transmits collimated or cophasal light to the other end of the tube where it is reflected by a mirror mounted on a two axis gimbal. The other magnetometer is attached to the gimbal. The reflected light returns to the source if the magnetometers are coaxial when the magnetometer axes are not parallel, the reflected light is sensed by the photomultiplier array the outputs of which drive a servo to realign the gimbaled mirror/magnetometer arrangement to parallelism so that sensed earth's field components are eliminated during operational use of the magnetometers as a gradiometer.

3,703,683
LIMITED PIVOTAL HANDLE ASSEMBLY FOR FURNITURE COMPONENTS

Ted Ciepley, Evansville, Ind., assignor to Bliss & Laughlin Industries, Incorporated, Oak Brook, Ill.

Filed April 2, 1970, Ser. No. 25,032
Int. Cl. A47b *95/02*

U.S. Cl. 16—126 **3 Claims**



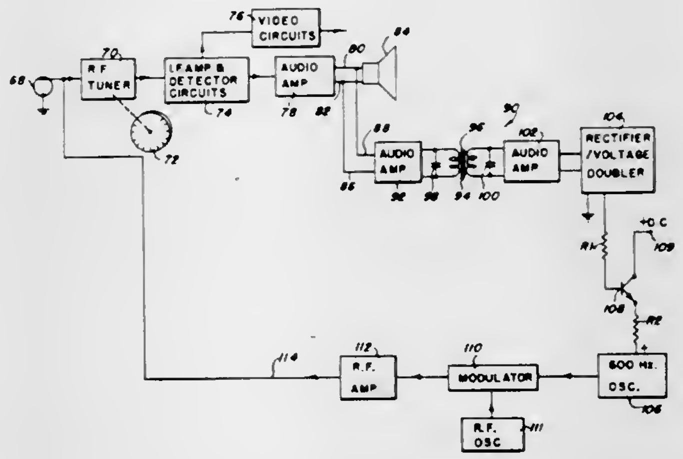
A handle assembly mounted to a drawer front or the like having a handle with limited pivoting capability. The handle assembly has a handle connected to a base by means of a pair of arms connected to either end of a shaft. The arms have cam shaped members with recesses for resting against lugs mounted on the base. The shaft has a boss for resting against a flat surface located within the base. The cam shaped members and boss prevent the handle from pivoting sufficiently down to damage the furniture surface.

3,703,684
CHANNEL MONITORING SYSTEM FOR AUDIENCE SURVEY PURPOSES

David S. McVoy, Sarasota, Fla., assignor to Coaxial Scientific Corporation, Sarasota, Fla.

Filed Jan. 25, 1971, Ser. No. 109,162
Int. Cl. H04h *1/04;* **H04b** *3/46*

U.S. Cl. 325—31 **4 Claims**



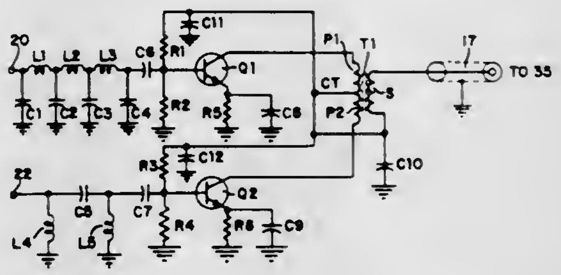
A coaxial cable system for television communications or the like comprises an arrangement for sending a control signal selectively on the audio sub-carrier of each of a number of television channels. Receivers connected to the cable have circuitry for detecting the presence of the control signal when tuned to a channel over which the control signal is being sent. Each receiver has monitor signal generating circuitry that transmits a unique monitoring signal responsive to detection of the control signal. The monitoring signal is transmitted to monitoring circuitry at the headend of the cable, and the monitoring circuitry detects the presence or absence of the monitoring signal from each receiver, thereby indicating if the receiver is tuned to a particular channel.

3,703,685
MULTIBAND ANTENNA WITH ASSOCIATED R.F. AMPLIFIER

Nicholas T. Simopoulos, and James B. Y. Tsui, both of Dayton, Ohio, assignors to Labtron Corporation of America, Dayton, Ohio

Filed Sept. 10, 1969, Ser. No. 856,717
Int. Cl. H04b *1/16*

U.S. Cl. 325—373 **1 Claim**



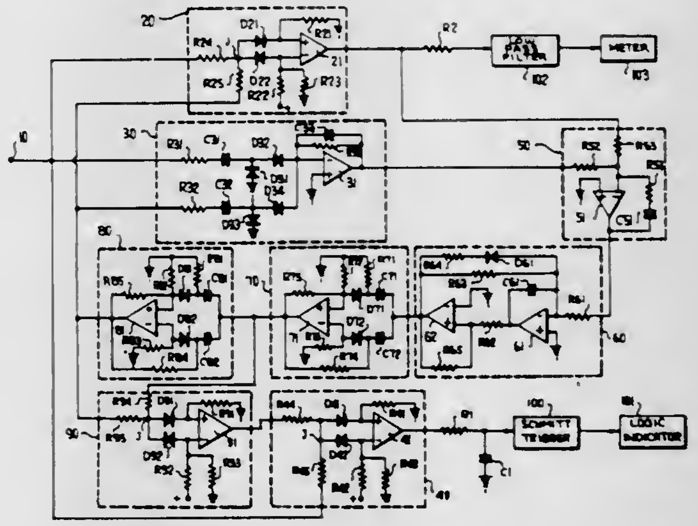
An improved VHF television antenna includes a pair of elongated antenna elements mounted on a base member and a noise matched amplifier connected directly to each element to amplify the received signal which is then transferred by a low impedance cable to a television set. The input impedance of each amplifier is noise matched to the impedance of its corresponding element at the center of the band of wavelengths for which the element is designed to receive.

3,703,686
PHASE LOCK LOOP AND FREQUENCY DISCRIMINATOR EMPLOYED THEREIN

Norris C. Hekimian, Rockville, Md., assignor to Hekimian Laboratories, Inc., Rockville, Md.

Filed Sept. 17, 1971, Ser. No. 181,434
Int. Cl. H03b *3/04*

U.S. Cl. 331—11 **10 Claims**



A phase lock loop employs a frequency discriminator having a relatively slow response to pull a voltage controlled oscillator into frequency lock with an input signal. After frequency lock the output of the frequency discriminator is nulled and a phase detector becomes effective to maintain phase lock. The frequency discriminator utilizes an operational amplifier to which both the input and oscillator signals are capacitively coupled through respective oppositely poled diode gates. A feedback capacitor, which is much larger than the input coupling capacitors, has charge transferred thereto fro m each coupling capacitors during alternate half cycles of the input and oscillator signals. The net charge across the feedback capacitor is a measure of the frequency difference between the input and oscillator signals, and is zero at frequency lock.

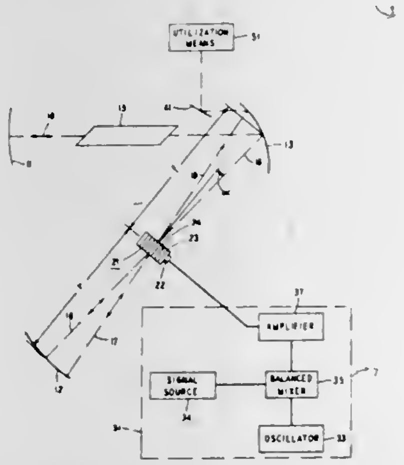
3,703,687
INTRACAVITY MODULATOR

Dan Maydan, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Feb. 12, 1971, Ser. No. 115,026

Int. Cl. H01s *3/05, 3/10*

U.S. Cl. 331—94.5 **13 Claims**



An intracavity modulator is disclosed in which a laser and an acousto-optic modulator are located in a cavity comprised of at least two high reflectivity mirrors. The geometry of the cavity is such that a beam of radiation from the laser has a waist in a region near the center of curvature of one of the mirrors. The acousto-optic modulator is located in this region. In a preferred embodiment of the invention, three mirrors are used to form a V-shaped cavity. The laser is located between two of these mirrors in one side of the V, and the acousto-optic modulator is located in the other side of the V.

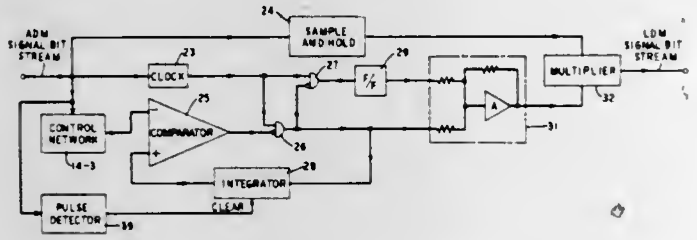
3,703,688
DIGITAL ADAPTIVE-TO-LINEAR DELTA MODULATED SIGNAL CONVERTER

James Loton Flanagan, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed April 7, 1971, Ser. No. 132,059

Int. Cl. H03k *13/22*

U.S. Cl. 332—1 **13 Claims**



A digital adaptive delta modulated (ADM) to linear delta modulated (LDM) signal converter is disclosed which operates at a predetermined multiple, *m*, of the applied adaptive modulated signal bit rate, 1/T. At each pulse time of the ADM signal, the adaptive step size is determined in a conventional manner; the determined step size is then utilized to develop a signal which is a linear delta modulated representation of the applied ADM signal.

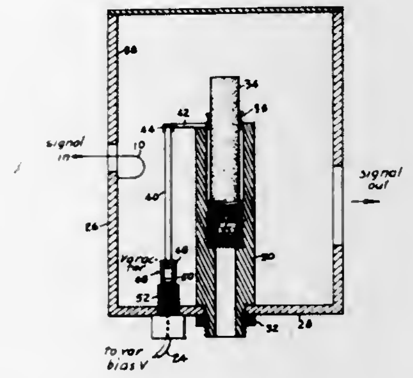
3,703,689
MICROWAVE VARACTOR-TUNED RESONATOR FOR PRESELECTOR

Jon R. McAtee, Rockville, Md., assignor to Microdyne Corporation

Filed Feb. 26, 1971, Ser. No. 119,178

Int. Cl. H01p *7/04*

U.S. Cl. 333—82 B **1 Claim**



A tunable varactor resonator has a high-Q cavity and a concentric inner probe, with one end of the concentric probe connected electrically to an eccentric probe of higher characteristic impedance in series with a varactor. Minimum insertion loss, approximately constant unloaded Q, and usability of low-Q varactor diodes are features.

3,703,690
DIELECTRIC WAVEGUIDES

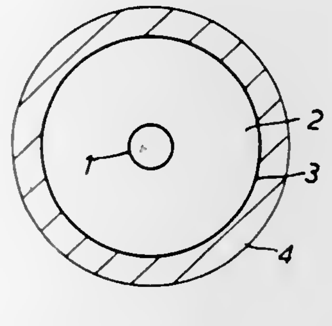
Ivor Albert Ravenscroft, Woodbridge, and Lynden Ashrooke Jackson, Ipswich, both of England, assignors to The Post Office, London, England

Filed Dec. 15, 1970, Ser. No. 98,242

Claims priority, application Great Britain, Dec. 17, 1969, 61,589/69

Int. Cl. H01p *3/16, 3/18*

U.S. Cl. 333—95 S **4 Claims**



A dielectric waveguide for millimetric wavelengths comprising a core of polymer material supported by a body of foamed polymeric material and enclosed in a protective jacket.

3,703,691
SHUNT TRIP WITH LOAD TERMINAL

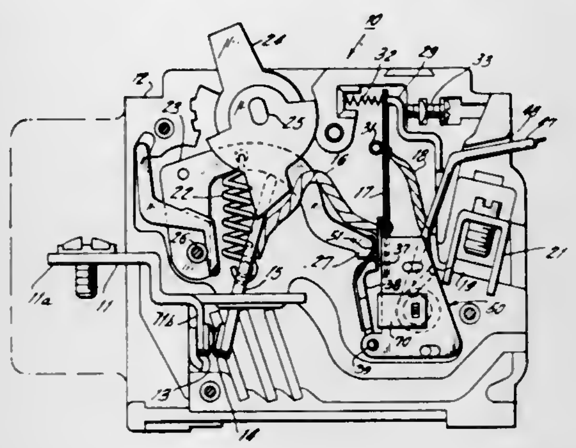
Carl E. Gryctko, Haddon Heights, N.J., and Howard R. Shaffer, Glenside, Pa., assignors to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Aug. 31, 1971, Ser. No. 176,641

Int. Cl. H01h *83/10*

U.S. Cl. 335—20 **10 Claims**

A compact circuit breaker having automatic overload protection is provided with a shunt tripping coil that generates flux to release the same latch acted upon by the overload protection means. The shunt trip coil within the circuit breaker is connected to a shunt lead, extending from the breaker, and to the conventional load terminal. Typically, external of the breaker the shunt lead is connected to neutral through a normally open pushbutton switch and voltage is removed from the shunt trip coil when the breaker opens.



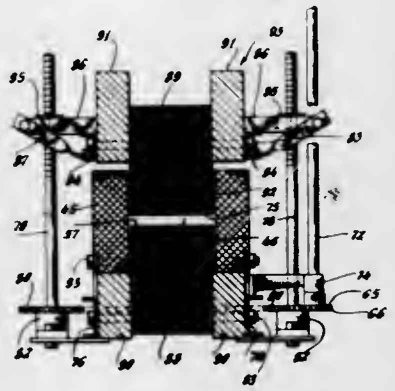
3,703,692
MECHANICALLY ADJUSTABLE HIGH VOLTAGE INDUCTIVE REACTOR FOR SERIES RESONANT TESTING

Stanley G. Peschel, Brewster, N.Y., assignor to Hipotronics, Inc., Brewster, N.Y.

Continuation of Ser. No. 871,205, Nov. 3, 1969, abandoned, which is a division of Ser. No. 730,711, May 11, 1968, Pat. No. 3,515,986. This application Nov. 3, 1971, Ser. No. 195,485

Int. Cl. H01f *21/06*

U.S. Cl. 336—134 **2 Claims**



Mechanically adjustable inductive reactor for series-resonant corona and dielectric testing of capacitive loads, such as, long lengths of high voltage electrical transmission cable which enable unusually long lengths of unusually high voltage cable to be tested conveniently and economically. The invention provides advantages when testing shorter lengths of cable at the usual voltage levels of 150,000 volts or 225,000 volts, but the advantages become greater at the higher voltages and longer lengths forseen in the future by the inventor. A mechanically adjustable high-voltage inductor is resonated directly in series with the cable capacitance of a long cable at high voltage. Three embodiments of mechanically adjustable, low flux-fringing, inductors are disclosed which are linear in inductance variation as a function of mechanical movement and are convenient and quiet to operate as well as being economical in amounts of steel and copper materials employed for a given electrical (kilovolt-ampere) rating.

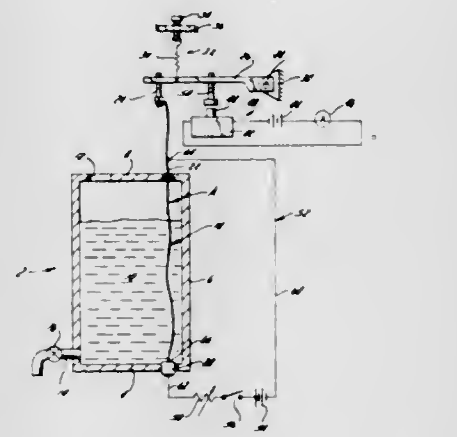
3,703,693
LIQUID LEVEL SENSING SYSTEM

Robert N. Levinn, Catskill, N.Y., assignor to American Thermostat Corporation, South Cairo, N.Y.

Filed April 1, 1971, Ser. No. 130,200

Int. Cl. F03g *7/06;* **G08b** *21/00;* **H01b** *61/01*

U.S. Cl. 337—1 **3 Claims**



For detecting a level of a liquid in a container, an element is mounted in a container so as to extend along an area corresponding to the location where liquid depth is to be detected. That element is formed of a material having a "memory" which is actuated when the material is subjected to a predetermined temperature, to cause the material to change its shape and therefore alter the effective length of the element. Heat is provided to the element, as by causing an electrical current to pass therethrough, in such an amount as to cause said element to be heated to said predetermined temperature when said element is enveloped by air or some other fluid of relatively low heat-dissipating characteristic, but the liquid of the level of which is to be sensed has a relatively high heat-dissipating characteristic such that the liquid-enveloped sections of the element will not be raised to said predetermined temperature. It is only when a given length of said element is exposed to air or other fluid, thus causing that length to exceed said predetermined temperature, that sufficient force is developed to actuate an appropriate work means such as a switch controlling an alarm system or the like.

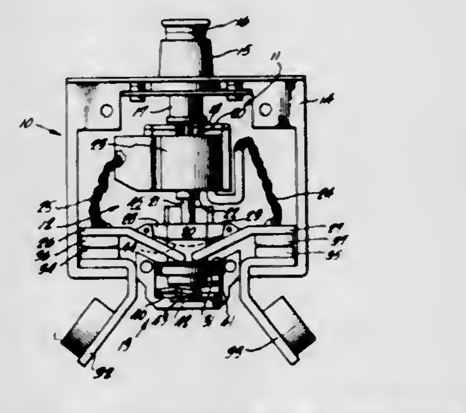
3,703,694
CONTACT OPERATING MECHANISM FOR CONTACT BREAKER

John W. Bullock, Northridge, Calif., assignor to Arrow-Hart, Inc., Hartford, Conn.

Continuation of Ser. No. 11,259, Feb. 13, 1970, abandoned. This application Oct. 29, 1971, Ser. No. 193,915

Int. Cl. H01h *71/16, 73/06, 73/30*

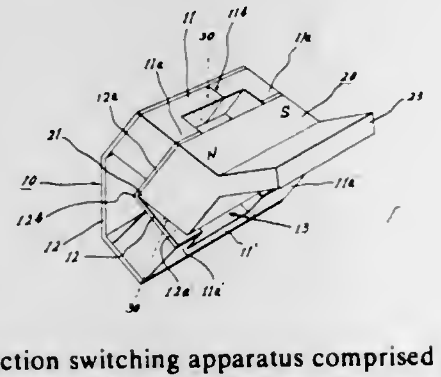
U.S. Cl. 337—62 **17 Claims**



A contact closure mechanism for a circuit breaker has a pair of contact arms bearing contacts which are pivotally mounted at their mid-sections on the ends of outwardly extending projections formed on a member slidable along an axis. A coiled contact pressure spring urges the contact arms into closure relationship with respective stationary contacts to establish electrical contact. A coiled contact opening spring coaxially disposed with respect to the pressure spring, selectively urges the slide member in one direction along the axis when the latching load pressure is relieved, causing the contact arms to pivot and their contacts to separate from the fixed contacts a distance which is exponential with respect to movement of said slide member. As the slide member moves, rocker cams forming an integral part of the opposing inside housing walls, are engaged by the contact arms which causes a rolling, pivotal separating movement to occur between the respective contact pairs of the circuit breaker.

3,703,695
SNAP-ACTION SWITCHING APPARATUS

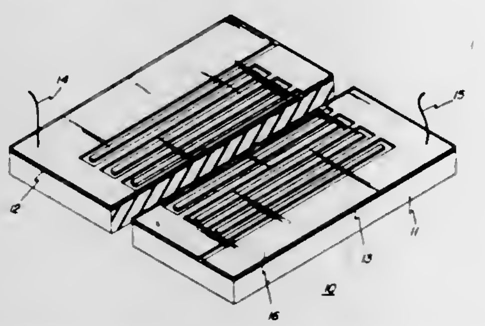
Toshio Mogi, Ayasemachi, Japan, assignor to Denki Onkyo Co., Ltd.
Filed Oct. 14, 1970, Ser. No. 80,602
Claims priority, application Japan, Oct. 18, 1969, 44/99229
Int. Cl. H01c *7/16*
U.S. Cl. 338—32 R **8 Claims**



A snap-action switching apparatus comprised of two external yokes at opposite positions separated by a certain distance in which one center yoke is inserted, a closed magnetic path for which one of the said external yokes is selectively used by alternately attracting the center yoke onto said two external yokes, and at least one galvano-magnetro effect device which is provided on at least one of said three yokes so that the galvano-magnetro effect device functions when the central yoke and external yokes form a closed magnetic path.

3,703,696
HUMIDITY SENSOR

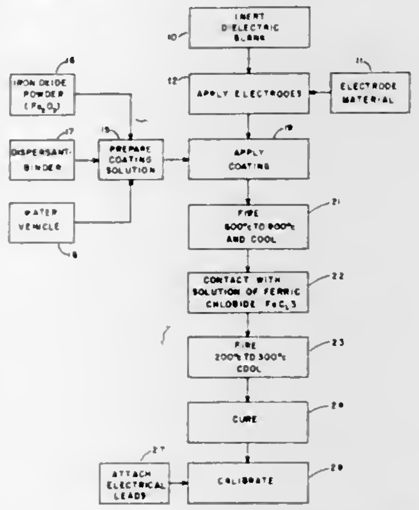
Kenneth W. Browall, Scotia, and Leonard V. Interrante, Schenectady, both of N.Y., assignors to General Electric Company
Filed Nov. 23, 1971, Ser. No. 201,279
Int. Cl. H01c *13/00*
U.S. Cl. 338—35 **9 Claims**



A humidity sensor which responds to changes in atmosphere water content by changes in electrical resistance, has an electrically insulating substrate, a pair of spaced apart interdigitated electrodes positioned on one surface of the substrate, an electrical lead in contact with each of the electrodes, and a thin film of chloromethylated quaternized polystyrene containing from 3.3 to 8.6 percent chlorine adhering to the electrode surface of the sensor.

3,703,697
RELATIVE HUMIDITY SENSOR

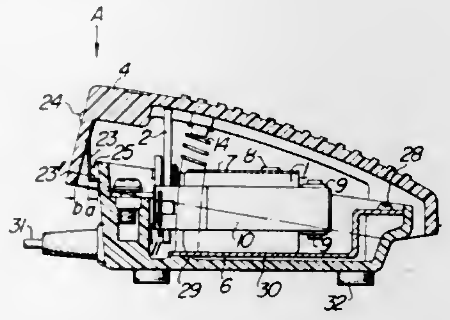
Merle E. Nicholas, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed June 23, 1971, Ser. No. 155,919
Int. Cl. H01c *13/00*
U.S. Cl. 338—35 **6 Claims**



An essentially full range resistance type relative humidity sensing element is produced by providing a dielectric blank, on which an electrode system has been applied, with a metal oxide coating, in a manner which imparts a porous structure thereto, and subsequently chemically bonding chlorine covalently into the oxide to produce an oxychloride structure. The metal oxide used is selected from a group, including those of Group VIII, Period 4 of the Periodic Table, which exhibit electrical insulating properties, the amount of electrical resistance thereof being dependent on the relative humidity of the environment to which it is exposed. The sensing element thus produced exhibits a much lower total electrical resistance coupled with a narrower range of variation in resistance produced by changes in relative humidity whereby rendering it compatible with ordinary electrical resistance measuring devices.

3,703,698
CONTROLLER FOR SEWING MACHINE

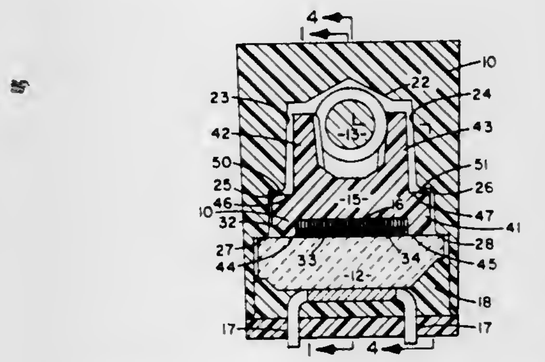
Fumio Nomura, Hirakata; Yutaka Takamiya; Sakuhiro Mizuno, both of Osaka; Kunio Higashi, Neyagawa, and Toshihiro Shimamoto, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed June 18, 1971, Ser. No. 154,582
Claims priority, application Japan, June 26, 1970, 45/64022; June 26, 1970, 45/64023; June 26, 1970, 45/64024; July 3, 1970, 45/66896
Int. Cl. H01l *9/06*
U.S. Cl. 338—108 **4 Claims**



A controller for a sewing machine comprising an auxiliary pile-pressing plate which is attached at one end to supporting plates and engaged at the other end with a pull bar which is driven by a pedal, a pile-pressing plate kept in contact at one end with the supported end of said auxiliary pile-pressing plate and held at the other end engageably apart from said auxiliary pile-pressing plate, and a pile-pressing part kept in contact with said pile-pressing plate.

3,703,699
TRIMMER POTENTIOMETER HAVING MEANS FOR LEAD SCREW MISALIGNMENT COMPENSATION

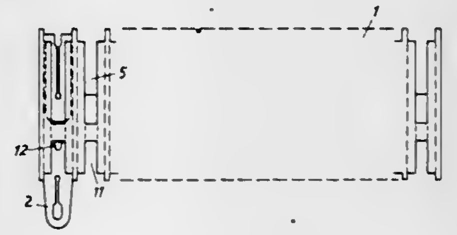
James Lahm, Fullerton, and Robert D. Hill, Jr., West Covina, both of Calif., assignors to Spectrol Electronics Corporation, City of Industry, Calif.
Filed Nov. 12, 1971, Ser. No. 198,387
Int. Cl. H01c *9/02*
U.S. Cl. 338—180 **4 Claims**



A trimmer potentiometer having a housing with an elongated interior cavity therein is provided with an axially extending lead screw which is subject to alignment tolerances during assembly. A substrate member having parallel resistor and collector elements on a flat surface thereof substantially closes an open side of the interior cavity of the housing. A pair of axially extending shoulders are defined by opposite side walls of the interior cavity which are spaced from and oppose a substantially flat surface on the substrate. A wiper member has a pair of flanges at opposite sides thereof disposed between the substrate member and the shoulders of the housing. The bottom surface of the wiper member is formed with a pair of spaced runners having a surface which slides along the substrate member. The other side of the flange on the substrate forms a shoulder overlying and opposing the shoulder on the housing member. A pair of spaced, resilient, conical protuberances are formed on both of the shoulders on the wiper member and engage and are compressed against the shoulders on the housing member. The compression of the protuberances forces the runner members into tight engagement with the substrate and prevents a misaligned lead screw from causing a wobbling or rocking motion to the wiper member during adjustment of the trimmer potentiometer.

3,703,700
TERMINAL BLOCK FOR SLOT CONNECTION OF INSULATED CONDUCTORS

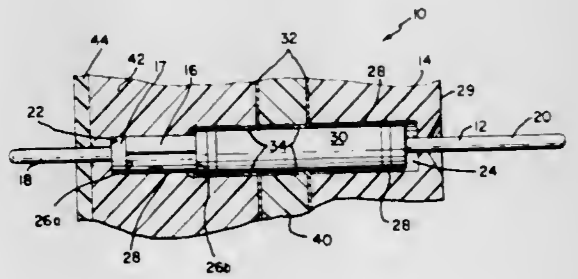
Sune Sigurd Sixten Hasselbohm, Hagersten, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed March 17, 1971, Ser. No. 125,301
Claims priority, application Sweden, April 8, 1970, 4766/70; Dec. 1, 1970, 16230/70
Int. Cl. H01r *9/00*
U.S. Cl. 393—198 R **4 Claims**



A terminal block for slot connection of insulated conductors, in particular for telecommunication lines, compresses a number of terminals fixed in a flat-shaped holder. Each terminal is bent 180° around a transverse line dividing the terminal into a longer and a shorter part, the longer part being inserted in a through passage of the holder and the shorter part in blind recess. The insulated conductor is connected to a terminal of the terminal block by pressing it into a pair of slots which are running parallelly from a hole in the bent end of the terminal towards the ends of each of the parts. In order to prevent the terminal from sliding in its recesses there is provided an embossed stop in the longer part which stop snaps against a bottom edge of a cut-out in the holder when the terminal has been inserted in the holder.

3,703,701
MOVABLE CONTACT CONNECTOR ASSEMBLY

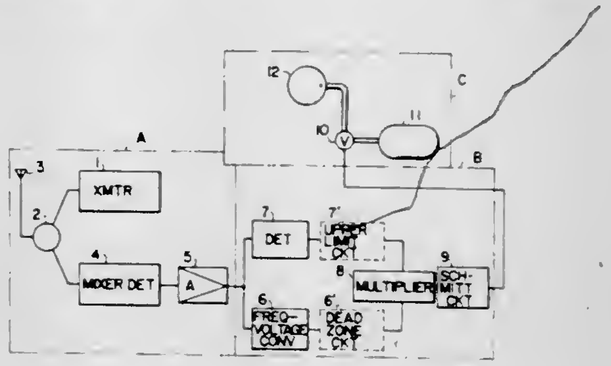
John Aaron Zimmerman, Jr., Hershey, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Jan. 25, 1971, Ser. No. 109,491
Int. Cl. H01r *9/08*
U.S. Cl. 339—221 R **2 Claims**



A contact pin having a collar is removably retained within a housing cavity by a retention bushing comprising a longitudinally split cylindrical sleeve encircling the connector terminal of the pin. The collar of the pin is held between a shoulder at the rear of the cavity and the rear end of the sleeve. The walls of the cavity radially compress the sleeve so as to retain the contact pin and the sleeve within the housing.

3,703,702
AIR BAG SAFETY DEVICE FOR VEHICLE PASSENGERS

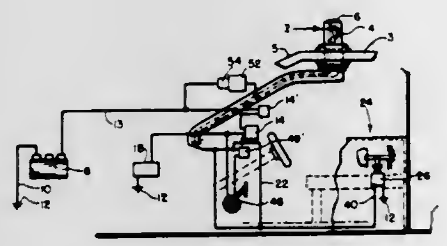
Hiroshi Arai, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan
Filed May 7, 1971, Ser. No. 141,155
Claims priority, application Japan, Nov. 16, 1970, 45/100160
Int. Cl. B60r *21/06*
U.S. Cl. 340—52 R **17 Claims**



The disclosure concerns a safety device for a vehicle wherein a Doppler transmitter-receiver apparatus mounted on the vehicle and transmitting and receiving radiation from objects in the path of the vehicle forms a safety signal when the vehicle is about to crash into an object. The safety signal actuates a protective apparatus which blows up an air bag to restrain passengers in the vehicle. To test the safety device, a manual switch causes the transmitter-receiver apparatus to transmit radiation toward the vehicle's radiator fan as the latter moves toward the radiation. The switch directs the resulting safety signal to energize an indicator lamp that shows the system to be operational.

3,703,703
VEHICLE THEFT SIGNALLING DEVICE

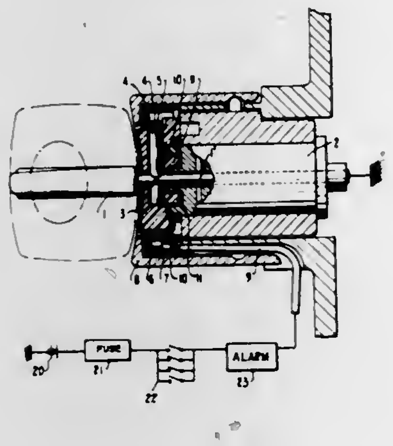
Sumas Payne, 8522 South Maryland Avenue, Chicago, Ill.
Continuation of Ser. No. 48,982, Jan. 24, 1970, abandoned.
This application Jan. 3, 1972, Ser. No. 214,891
Int. Cl. B60r *25/10*
U.S. Cl. 340—63 **5 Claims**



A crime prevention device comprising a vehicle dome light with a signal transmitting device which is actuated by tampering of the ignition, application of brakes or starter mechanism coupled with a locking system for locking the doors and windows of the vehicle to trap the thief. The signal transmitter is tuned to a wrist-carried bracelet receiver unit which has a light signal which is responsive to the transmission of signals from the transmitter. The bracelet unit is adapted to be manually actuated to light, for alerting the police force of impending criminal activity.

3,703,704
AUTOMOTIVE VEHICLE WARNING DEVICE WITH ALL POSITION IGNITION KEY CIRCUIT ACTUATION VIA STEERING LOCK

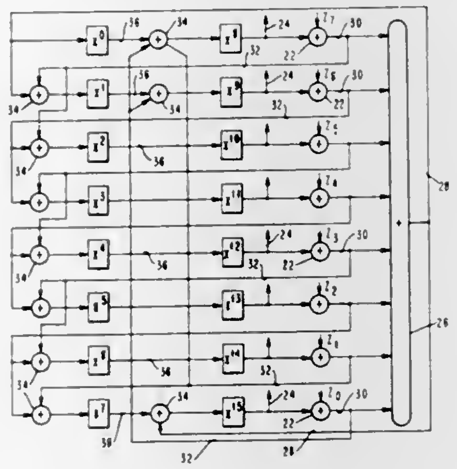
Gerhard Schiesterl, Stuttgart-Mohringen, and Josef Eibl, Ingolstadt/Danube, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Feb. 13, 1970, Ser. No. 11,167
Claims priority, application Germany, Feb. 14, 1969, P 19 07 390.6
Int. Cl. B60r *25/04*; **B60q** *1/52*; **H01r** *31/08*
U.S. Cl. 340—64 **9 Claims**



A steering lock for a motor vehicle which includes a make-contact to actuate a warning installation when the ignition key is left inserted in the lock and a vehicle door is opened; the locking cylinder of the steering lock includes a mounting support made from insulating material which contains two opposite pins or spring-ring parts projecting into the path of the key but without contacting one another; the inner ends of the pins or spring-ring parts may be constructed ball-shaped, conical, or the like, and are in contact with their outer ends at a slip-ring that is connected with the warning installation.

3,703,705
MULTI-CHANNEL SHIFT REGISTER

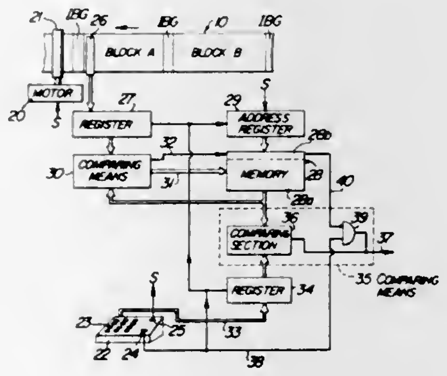
Arvind M. Patel, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 31, 1970, Ser. No. 103,205
Int. Cl. G06f *11/12*
U.S. Cl. 340—146.1 AL **7 Claims**



A linear feedback shift register for operating on a plurality f of parallel inputs according to a generator polynomial to produce encoding and decoding is provided having a plurality r of shift register stages $X_0 \ldots X_{r-1}$ each corresponding to one of the terms in the generator polynomial. A first plurality of modulo 2 addition means connect, for modulo 2 addition, each of said f data bit inputs $Z_{t+f-1}, Z_{t+f-2}, \ldots, Z_{t+1}, Z_t$ of the shift register to the output of an individual one of the last f register stages $X_{r-f}, X_{r-f+1}, \ldots, X_{r-1}$ according to the relationship Z_{t+f-1} to X_{r-f}, Z_{t+f-2} to $X_{r-f+1}, \ldots, Z_t$ to X_{r-1}. A second plurality of modulo 2 addition means are connected to the respective inputs of the first X_{r-f+2} shift register stages. The first feedback connection from the output of each of said first plurality of modulo 2 addition means in said f shift register stages is connected to each of two preceding second modulo 2 addition means in accordance with the relationship X_{r-f+1} to X_1 and X_2; X_{r-f+2} to X_2 and X_3; X_{r-1} to X_{r-f+1} and X_{r-f+2}. A third modulo 2 addition means connects each output of the first plurality of modulo 2 addition means to the register stages determined in accordance with the non-zero coefficients in the generator polynomial.

3,703,706
RECORD VERIFICATION APPARATUS

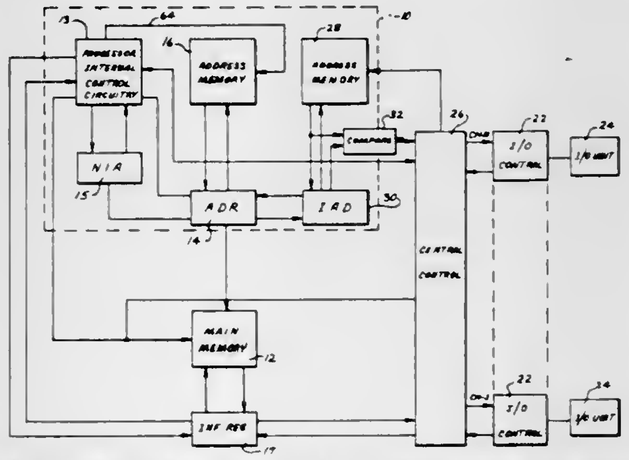
Mitsuo Ogura, and Satoshi Itoh, both of Odawara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 17, 1971, Ser. No. 116,200
Claims priority, application Japan, Feb. 20, 1970, 45/14187
Int. Cl. G06k *5/00*
U.S. Cl. 340—146.1 BA **10 Claims**



A record verification apparatus for comparing information of a block to be verified with verifying information so as to verify the former information. In the apparatus, information of the succeeding block is supplied to a first storage position of a memory to be compared with information of the preceding block having been previously verified, and information indicative of coincidence or non-coincidence therebetween is stored in a second storage position of the memory. Verifying information is compared with the information to be verified stored in the first storage position of the memory or with the coincidence or non-coincidence information stored in the second storage position of the memory to carry out the verification of the information to be verified.

3,703,707
DUAL CLOCK MEMORY ACCESS CONTROL

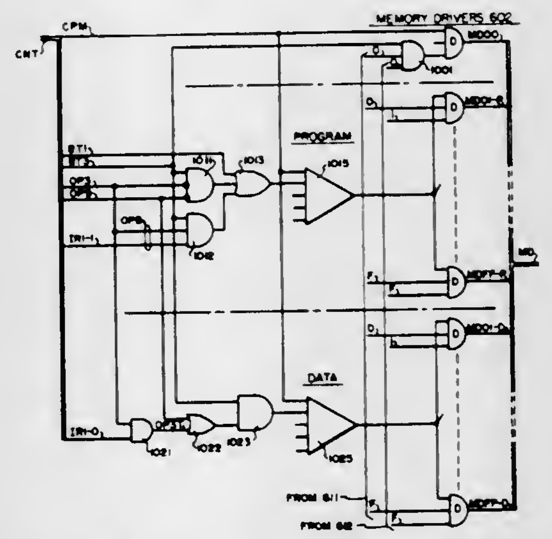
Duane E. Bovett, Claremont, Calif., assignor to Burroughs Corporation, Detroit, Mich.
Filed April 28, 1971, Ser. No. 138,254
Int. Cl. G06f *3/04, 9/18*
U.S. Cl. 340—172.5 **7 Claims**



There is described a control for accessing the main memory of a digital computer from a processor or a number of input/output control units on a time-sharing basis where the processor operates at a clock rate twice the speed of the input/output control devices. A buffering arrangement is provided which permits overlapping of the servicing of the input/output devices and the servicing of the processor which permits the processor to access memory between each input/output device memory access while still permitting the input/output devices to be serviced on a continuous basis.

3,703,708
MEMORY EXPANSION ARRANGEMENT IN A CENTRAL PROCESSOR

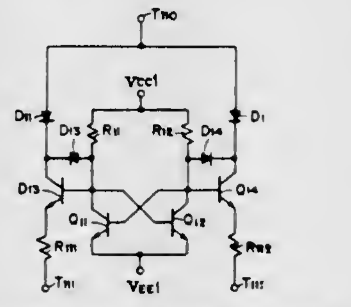
James Harold Foster, Jasper, Ontario, Canada, assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed May 12, 1971, Ser. No. 142,649
Int. Cl. G11c *7/00*
U.S. Cl. 340—172.5 **13 Claims**



The memory is divided into a program block and a data block with identical addresses for the two blocks, and a "paging" technique is used to select the appropriate block. The computer has an operation cycle for the execution of each instruction, the cycle being divided into intervals designated bit times. The first bit time of each cycle is used to read a program instruction word, and for some of the instructions a given other bit time of the cycle is used to read the contents of the operand address of the instruction. The paging technique comprises always reading a word from the program block during the first bit time, and during the other given bit times, for those instructions requiring reading the contents of the operand address, selecting either the program block or the data block depending upon the operation code. This permits operand addresses designating literals to be in the program block, while the principal data base is placed in the data block. In particular a transfer instruction does not have an operand address, but is used to take an address from the accumulator and read the contents thereof from the data block. To permit a similar operation for words in the program block, for example during a memory dump, a fetch instruction produces operations identical to those of the transfer operation, except that the contents of the address in the accumulator are obtained from the program block.

3,703,709
HIGH SPEED ASSOCIATIVE MEMORY CIRCUITS

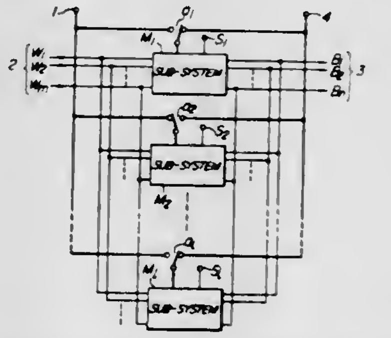
Shigeki Matsue, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan
Filed May 21, 1970, Ser. No. 39,291
Claims priority, application Japan, May 24, 1969, 44/40505; Jan. 28, 1970, 45/7435
Int. Cl. G11b *13/00*
U.S. Cl. 340—173 FF **4 Claims**



A high-speed associative memory circuit is disclosed comprising a flip-flop operating as a memory storage circuit, and a pair of switching transistors connected to the "true" and "not" output terminals of the flip-flop. The latter transistor pair thus defines a circuit for detecting the state of the flip-flop transistors.

3,703,710
SEMICONDUCTOR MEMORY

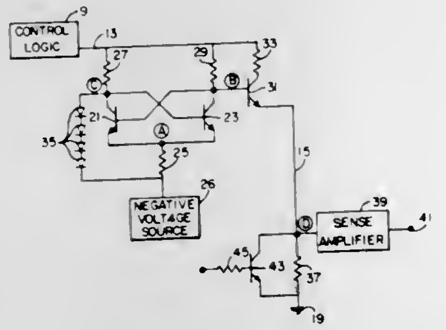
Masaharu Kubo; Ryoichi Hori, both of Hachioji, and Minoru Nagata, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 4, 1971, Ser. No. 103,447
Claims priority, application Japan, Jan. 5, 1970, 45/1811
Int. Cl. G11c *11/40*; **H03k** *3/286*
U.S. Cl. 340—173 FF **11 Claims**



A semiconductor memory comprising semiconductor elements organized into a plurality of sub-systems individually provided with respective power supply switches each actuated in synchronism with or in response to the select signal to the corresponding sub-system, whereby a predetermined amount of power is supplied only to the selected sub-system while the remaining sub-systems receive no power or just sufficient power to maintain their memory content.

3,703,711
MEMORY CELL WITH VOLTAGE LIMITING AT TRANSISTOR CONTROL TERMINALS

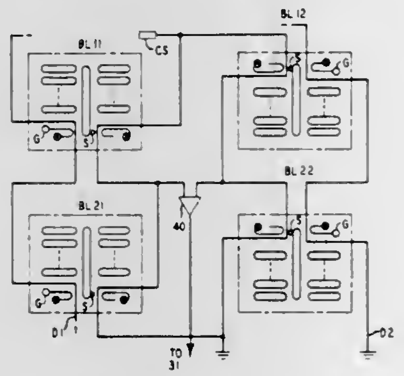
Franklin T. Duben, Dedham, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.
Filed Jan. 4, 1971, Ser. No. 103,483
Int. Cl. G11c *7/00, 11/40;* **H03k** *3/286*
U.S. Cl. 340—173 FF **7 Claims**



A memory cell comprising cross coupled switch elements with internal limiting means for establishing a switching condition requires only two signal lines to both select a cell from an array and perform reading and writing operations.

3,703,712
MASS MEMORY ORGANIZATION

Andrew Henry Bobeck, Chatham, and Henry Evelyn Derrick Scovil, Gladstone, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed April 12, 1971, Ser. No. 133,206
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF **17 Claims**

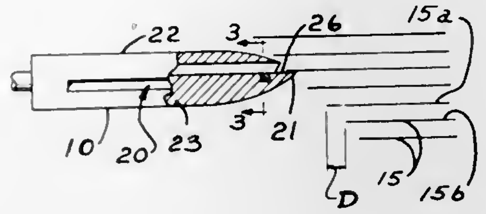


Layers of materials in which single wall domains can be moved and operated in the familiar field access mode are organized in an array and operated in a word-organized block access fashion which permits an advantageous noise cancellation detection arrangement.

3,703,713
VARIABLE DIAMETER DISC PACK WITH COOPERATING HEAD

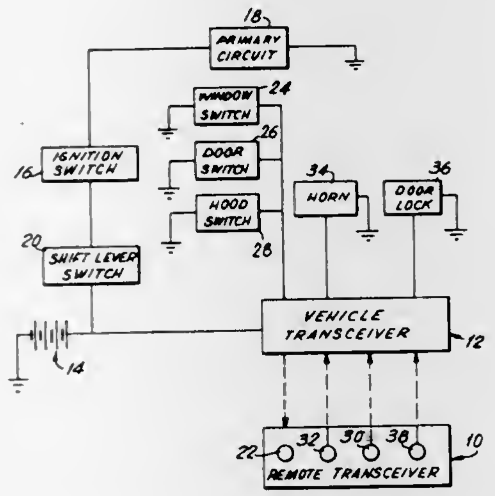
Arthur Pohm, and Roy J. Zingg, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Ames, Iowa
Filed Sept. 24, 1971, Ser. No. 183,474
Int. Cl. G11b *5/82, 25/04*
U.S. Cl. 340—174.1 C **7 Claims**

A large electronic memory system, designed to store up to 10^{12} bits, includes a large number of flexible discs coated with a magnetizable material for recording. The discs are arranged in groups, and each group includes a number of discs of increasing diameter. A thin read head is formed with a central slit that is designed to receive a disc selected to be read. The head is moved radially until its tapered distal end aligns vertically with the outer diameter of a disc desired to be selected. It is then moved vertically until the slit is aligned with the plane of the disc, and the head is then moved radially again, forcing adjacent discs away from the selected disc, until the read head is reading the desired track on that disc.



3,703,714
REMOTE ALARM SYSTEM

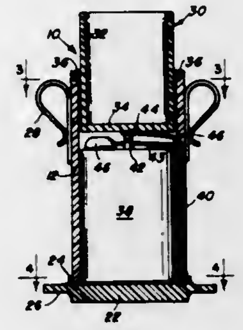
Maurice Andrews, 2400 Johnson Avenue, Riverdale, N.Y.
Filed Aug. 17, 1970, Ser. No. 64,232
Int. Cl. H04b *7/00*
U.S. Cl. 340—224 **12 Claims**



A remote alarm system for transmitting an alarm signal to a remote receiver when unauthorized access to a given installation is attempted. A remote portable radio transceiver is capable of receiving signals through the atmosphere from and transmitting signals through the atmosphere to a stationary radio transceiver which is operatively tuned to the remote transceiver for also receiving and transmitting signals from and to the remote transceiver. The stationary transceiver is located at the installation which is to be protected against unauthorized access, and a source of electrical energy is connected with the stationary transceiver. Connected to the installation as well as to the stationary transceiver is a switch for responding to an attempted unauthorized access so as to transmit a signal from the stationary transceiver to the remote transceiver. At the remote transceiver is an alarm which responds to the latter signal for warning the carrier of the remote transceiver that an attempted unauthorized access is being made at the installation.

3,703,715
FLOOD ALARM

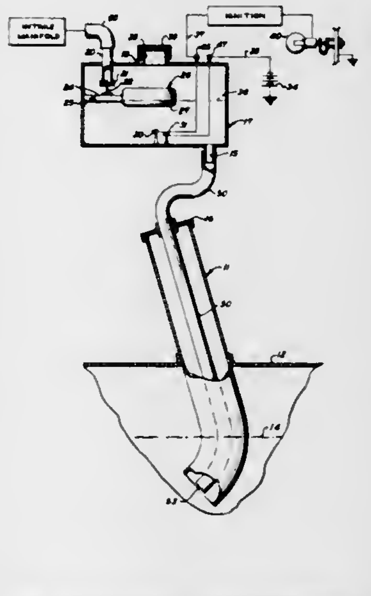
Byron L. McNally, 1526 Scott Street, Chicago Heights, Ill.
Filed Dec. 21, 1970, Ser. No. 100,177
Int. Cl. G08b *21/00*
U.S. Cl. 340—240 **5 Claims**



An alarm for indicating a sudden flow of liquid such as water or the like either into or out of a basement drain or the like at a predetermined rate of flow, the alarm being inoperable when the flow of liquid into the drain is at a predetermined low rate.

3,703,716
AUTOMATIC TRANSMISSION FLUID REPLENISHMENT MEANS AND LEVEL INDICATOR

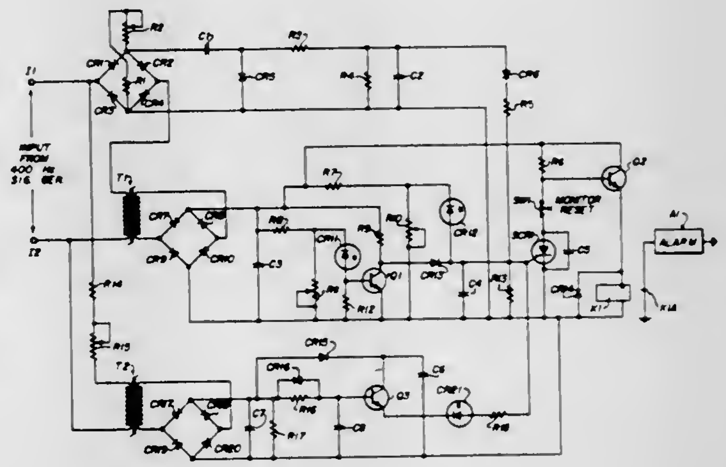
Thomas Moore, 7235 Leavitt Road, Elyria, Ohio
Filed July 19, 1971, Ser. No. 163,799
Int. Cl. F16k *31/18;* **G08b** *21/00*
U.S. Cl. 340—244 B **9 Claims**



An automatic transmission replenishment container and fluid level indicator having a tube inserted into the transmission fluid with an opening located below the normal fluid level, within, however, the operating level of the transmission, the tube connecting on its upper end into the bottom of a clear plastic container of about one quart capacity which further connects at its top with a partial vacuum source such as a vehicle's intake manifold. A float in the container is buoyed by transmission fluid drawn into the container by the vacuum, the float incorporating means to secure the vacuum line into the container when sufficient fluid has been drawn into the container. The float also includes an electrical conductor which, when the float is not buoyed by the fluid, closes an electrical circuit which extends into the container to energize an indicator. In the event the transmission fluid descends to the tube opening, fluid in the container received in the transmission maintains the transmission fluid at an operating level until at least the container fluid has been entirely emptied from the container.

3,703,717
VOLTAGE/FREQUENCY RATIO MONITOR FOR A. C. SIGNALS

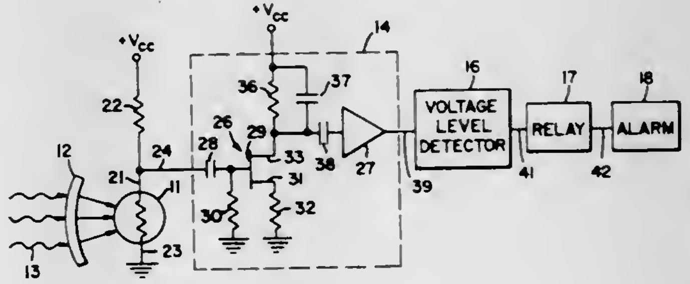
Karl H. Kuster, Glendale Heights, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Jan. 11, 1971, Ser. No. 105,174
Int. Cl. G08b *21/00*
U.S. Cl. 340—253 Y **8 Claims**



A circuit for use with a signal generator to monitor the output signals, that provides an alarm indication if either voltage or frequency fall below or exceed predetermined limitations. Only signals within a permissible voltage/frequency ratio, regardless of limitations, are considered acceptable. Monitoring of voltage/frequency ratio, signal symmetry, and voltage amplitude are included.

3,703,718
INFRARED INTRUSION DETECTOR SYSTEM

Herbert L. Berman, Los Altos Hills, Calif., assignor to Optical Coating Laboratory, Santa Rosa, Calif.
Continuation-in-part of Ser. No. 9,315, Feb. 6, 1970, abandoned. This application Jan. 7, 1971, Ser. No. 104,667
Int. Cl. H01j *39/00*
U.S. Cl. 340—258 D **11 Claims**

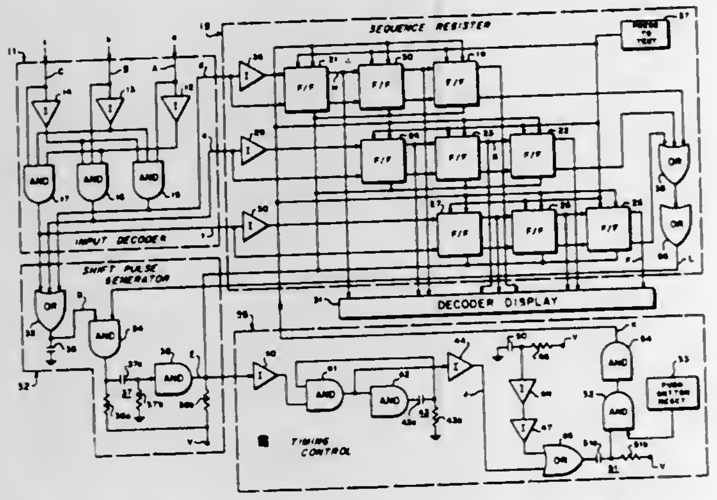


Infrared intrusion detector system utilizing a single sensing element and optical means for focusing radiation from one or more discrete fields of view onto the sensing element. An amplifier tuned to have a frequency response corresponding to the walking speed of an intruder amplifies the signal from the sensing element and provides means for discriminating between changes in infrared radiation due to the presence of an intruder and gradual temperature changes such as room or ambient changes.

3,703,719
SEQUENCE MATRIX

Henry R. Beyer, Chalfont; Thomas F. Long, Warminster, and Richard G. DeSipio, Philadelphia, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy

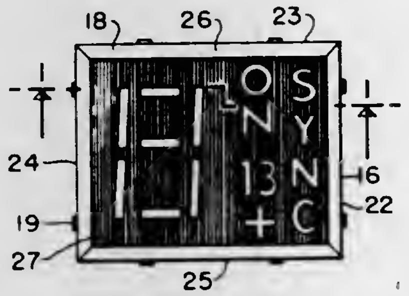
Filed May 31, 1967, Ser. No. 644,439
Int. Cl. H03k *13/243*
U.S. Cl. 340—347 DD **6 Claims**



A sequence matrix for decoding *n* binary events each having *m* different states without the need for a clock or a data message preamble. Sequential binary input signals are applied to an input decoder which provides steering signals to a sequence register for storing the sequential information to provide a parallel pure binary word readout. The steering signals are shifted from one storage element in the shift register to another by shift pulses generated from the sequential input signals. A timing circuit triggered by the shift pulses initiates a time gate during which the sequential input signals must be processed or the register will be reset without providing a readout. The decoder readout from the sequence register is displayed on a decoder display.

3,703,720
LIGHTED DISPLAY BOX HAVING MEANS FOR ENCASING LAMP STRUCTURE

Joseph M. Cartelli, 63-10 110th Street, Forest Hills, N.Y. Continuation of Ser. No. 7,820, Feb. 2, 1970, abandoned. This application Jan. 10, 1972, Ser. No. 216,850
Int. Cl. G08b *5/00*
U.S. Cl. 340—381 R **1 Claim**

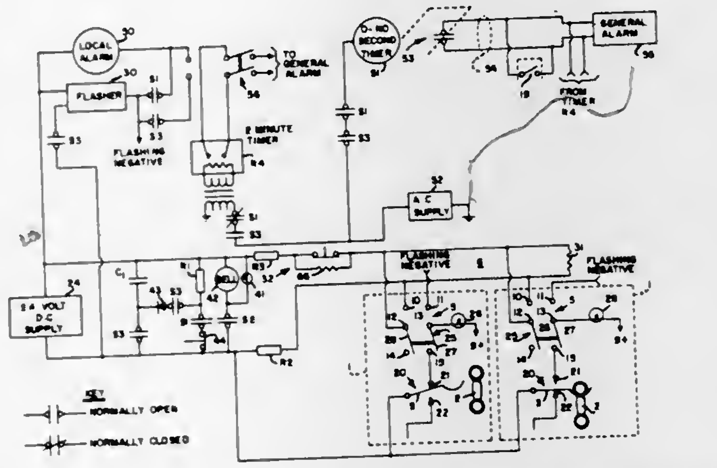


Lighted readout displays are assembled in a wide variety of forms from a selection of open ended boxes that are contained in a bezel cut and assembled from a uniform strip. The strip secures an indicating window in front of the boxes and securing a bulb carrying bus plate and a spring contact containing insulated back plate behind the boxes, the strip having a front flange extending in front of the window, containing integrally formed rearward extending assembly hooks securing the back plate in the bezel, and containing a stop ridge on which said back plate is seated within the bezel.

3,703,721
FIRE ALARM SYSTEM

Harry C. Goodwater, San Francisco, Calif., assignor to Audio Alert Corporation, San Francisco, Calif.

Filed June 1, 1971, Ser. No. 148,409
Int. Cl. G08b *1/00, 29/00*
U.S. Cl. 340—409 **4 Claims**

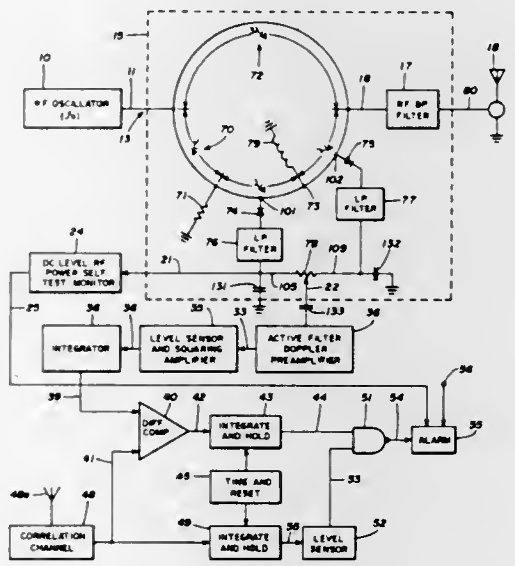


An alarm system is provided for use in conjunction with a conventional telephone or intercommunications system in which each telephone comprises a cradle circuit activated upon removal of a handset from its associated cradle. For indicating an alarm, there is provided in each telephone a selflocking alarm switch which is activated by a push-button made accessible only upon removal of the handset from the cradle.

3,703,722
MOTION DETECTION SYSTEM WITH SPLIT-RING MONOSTATIC DOPPLER DETECTION

David N. Gershberg, North Rockville, Md., and Alex Y. Lee, Arlington, Va., assignors to E-System, Inc., Dallas, Tex.

Filed June 2, 1971, Ser. No. 149,151
Int. Cl. G01s *9/42*
U.S. Cl. 343—5 PD **16 Claims**

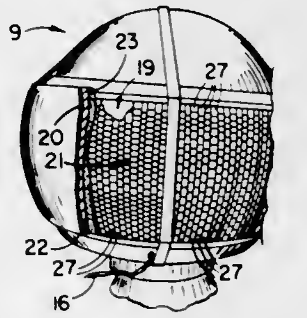


A motion detection system wherein an RF transmitter is connected through a split-ring doppler detector to a transmit/receive antenna. Both the RF transmitter and the antenna are connected to nodes on the split-ring detector to provide a matched and balanced system. Diode detectors are connected, in opposite directions, to the ring detector at points between the transmitter load and the antenna to insure desired transmitter injection to the diodes for sensitive receiver operation. The diode detectors connect through individual low-pass filters to the inputs of an AC coupled, active filter, amplifier, which amplifies the doppler return signal that has been conducted by the diode detectors, while rejecting unwanted doppler frequencies to reduce false alarms. A microwave bandpass filter is so positioned in the antenna line to further reduce false alarms by defining a specific radio frequency bandwidth. A self-test feature is provided in that the DC level at one or both detector diodes can be monitored. To further reduce false alarms a correlating detection system provides a back-up signal for the doppler detector.

3,703,723
PORTABLE PASSIVE REFLECTOR

Victor Albanese; Arthur E. Johnson, both of Valley Stream, and Charles L. Dietz, Williston Park, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, L.I., N.Y.

Filed Jan. 9, 1970, Ser. No. 1,610
Int. Cl. H01q *15/08*
U.S. Cl. 343—18 D **4 Claims**

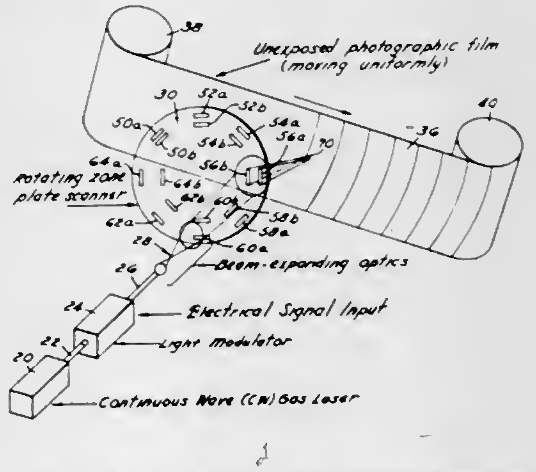


A portable passive reflector that utilizes a Luneberg lens to focus upon a diode array positioned about the focal region of the lens, an interrogating signal eminating from a predetermined direction. A reflecting plate is mounted behind the diode array a distance equivalent to multiples of a quarter wavelength of the interrogating signal. By selectively pulsing the diode array, the effective cross section of the reflector as seen by the interrogating radar is varied thus modulating the reflected signal.

3,703,724
RECORDER WITH ZONE PLATE SCANNER

Carlton E. Thomas, Van Nuys, Calif., assignor to KMS Industries, Inc., Ann Arbor, Mich.

Filed July 22, 1971, Ser. No. 165,020
Int. Cl. G11b *7/00;* **G02b** *27/38*
U.S. Cl. 346—108 **5 Claims**

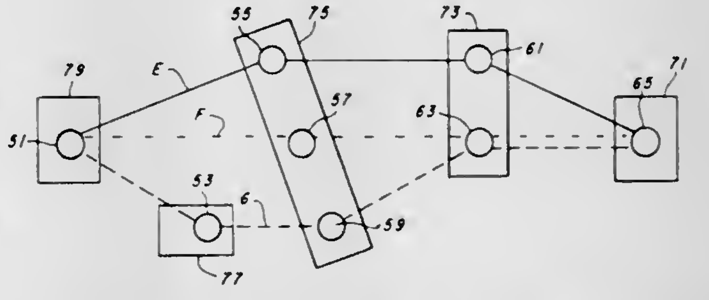

Unexposed photographic film (moving uniformly)
38
40
36
30
rotating zone plate scanner
Beam-expanding optics
Electrical Signal Input
Light modulator
Continuous Wave (CW) Gas Laser
24
22
20

A zone plate scanner for wide bandwidth laser recorders utilizing a rotating disc having pairs of peripheral windows, each containing a zone plate, one set of windows in each pair being spaced circumferentially at a constant radius, and a second set being similarly spaced circumferentially but each having a different radius. The spacing changes the grating frequency for each pair and encodes each track on a moving film in a manner which eliminates interference in close spacing and reduces the criticality of readout equipment.

3,703,725
METHOD FOR OPERATING A MANUFACTURING LINE

Earl Raymond Gomersall, Chicago, Ill.; Roger Paul Meyer, Richardson, Tex., and Susan English Rejmaniak, Hackensack, N.J., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 2, 1970, Ser. No. 86,204
Int. Cl. G06f *15/20*
U.S. Cl. 444—1 **19 Claims**

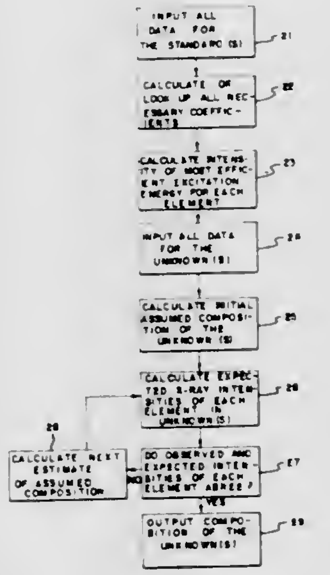


A manufacturing line has a plurality of work stations. The work stations are ordered into sequential flow points through which work in process flows. The work flow through the sequentially ordered flow points is balanced in an automatic data processing machine by starting at the last flow point in the ordered sequence. In a multiproduct path manufacturing line, the flow points on adjacent product paths are ordered into neighborhoods prior to balancing the manufacturing line.

3,703,726
QUANTITATIVE CHEMICAL ANALYSIS BY X-RAY EMISSION SPECTROSCOPY

Donald A. Stephenson, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 31, 1970, Ser. No. 103,193
Int. Cl. G06f *15/46*
U.S. Cl. 444—1 **3 Claims**


INPUT ALL DATA FOR THE STANDARD(S)
21
CALCULATE OR LOOK UP ALL NECESSARY COEFFICIENTS
22
CALCULATE INTENSITY OF MOST EFFICIENT EXCITATION ENERGY FOR EACH ELEMENT
23
INPUT ALL DATA FOR THE UNKNOWN(S)
24
CALCULATE INITIAL ASSUMED COMPOSITION OF THE UNKNOWN(S)
25
CALCULATE EXPECTED X-RAY INTENSITIES OF EACH ELEMENT IN UNKNOWN(S)
26
CALCULATE NEXT ESTIMATE OF ASSUMED COMPOSITION
28
DO OBSERVED AND EXPECTED INTENSITIES OF EACH ELEMENT AGREE?
27
NO
YES
OUTPUT COMPOSITION OF THE UNKNOWN(S)
29

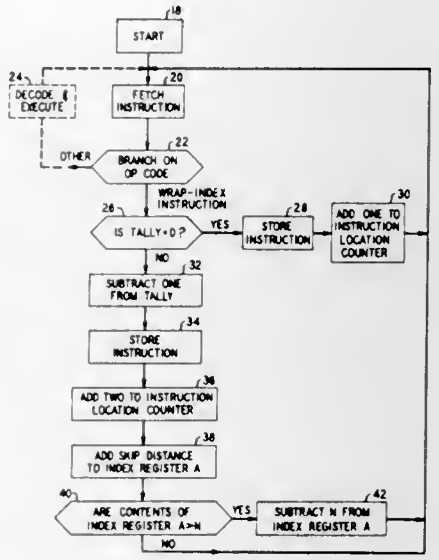
In X-ray emission spectrometry a quantitative chemical analysis of the elements in an unknown sample is obtained. A standard, or standards, whose composition has previously been accurately established is used to determine the first order approximation to the original intensity of the most efficient excitation energy for each element being determined. The most efficient excitation energy is defined as that energy which is just greater than the energy of the absorption edge of the characteristic X-ray emission line employed in the analysis. Using the computed original intensity of the most efficient excitation energy for each element in the standard(s), the observed X-ray intensities measured on the unknown, and an assumed chemical composition of the unknown, the expected characteristic X-ray intensity for each element in the unknown is computed. The assumed chemical composition of the unknown is then adjusted by a self-consistent iterative procedure until the expected and observed X-ray intensities for each element being determined agree. In this manner the best estimate of the chemical composition of the unknown is determined.

3,703,727
METHOD FOR GENERATING RANDOM NUMERICAL QUANTITIES

Kenneth Charles Knowlton, Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed June 18, 1971, Ser. No. 154,399
Int. Cl. G06f *7/22*

U.S. Cl. 444—1 **24 Claims**

In a digital computer, random numbers exhibiting any desired numerical distribution are generated by accessing a table of stored random numbers having the desired distribution starting at a predetermined location and indexing in wrap-around fashion using a predetermined random skip distance.



New starting points and skip distances are periodically generated using a conventional random number generator.

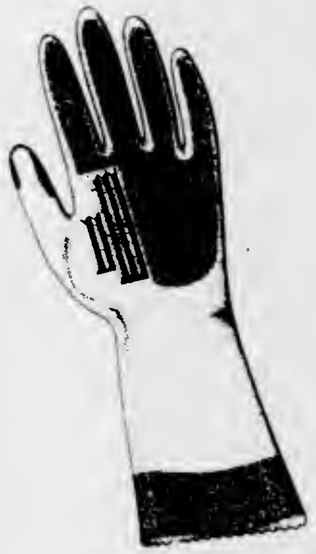
DESIGNS

NOVEMBER 21, 1972

225,139
GLOVE

Raymond M. Vennettilli, 62 Rue Auguste Delaune, Villejuif, France
Filed Dec. 4, 1970, Ser. No. 26,285
Claims priority, application France Oct. 19, 1970
Term of patent 14 years
Int. Cl. D2—*06*

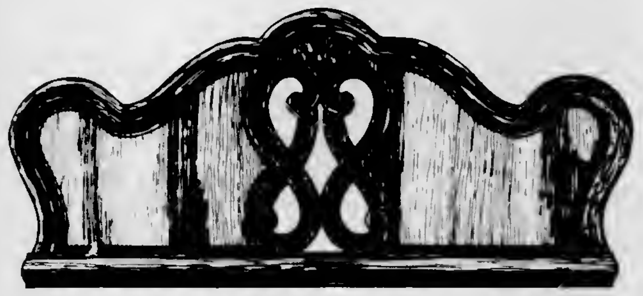
U.S. Cl. D2—372



225,140
HEADBOARD FOR A BEDSTEAD OR SIMILAR ARTICLE

Huey T. Keller, 1609 Davidson Road, High Point, N.C. 27262
Filed Aug. 10, 1970, Ser. No. 24,384
Term of patent 14 years
Int. Cl. D6—*01*

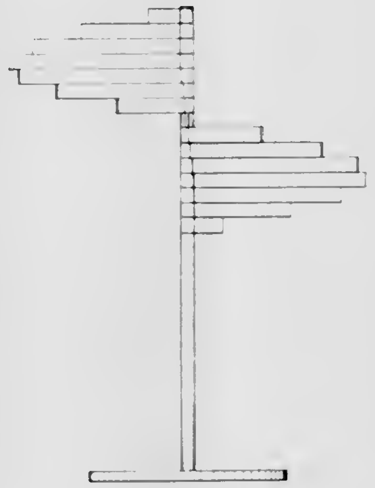
U.S. Cl. D5—4



225,141
MAGAZINE TREE

Hugh C. Acton, Ross Township, Kalamazoo County, Mich., assignor to The Vecta Group, Inc., Kalamazoo, Mich.
Filed Oct. 30, 1970, Ser. No. 25,735
Term of patent 14 years
Int. Cl. D6—*99*

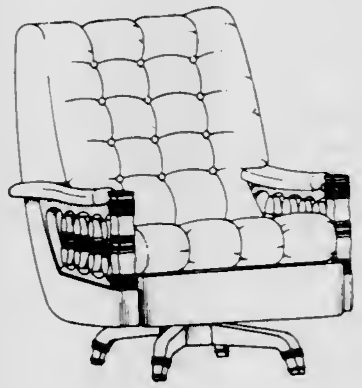
U.S. Cl. D6—20



225,142
CHAIR

Thomas Winrow, Naperville, Ill., assignor to Futorian Corporation, Amsterdam, N.Y.
Filed Dec. 3, 1970, Ser. No. 26,266
Term of patent 14 years
Int. Cl. D6—*02*

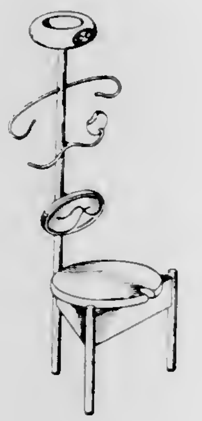
U.S. Cl. D6—31



225,143

COMBINED VALET STAND AND SEAT

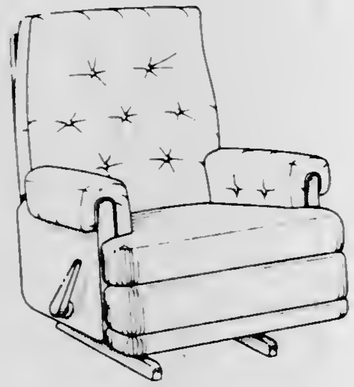
George J. Ritter, 32740 Whispering Palms Trail,
Palm Springs, Calif. 92262
Filed Feb. 4, 1971, Ser. No. 112,846
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—33



225,144

CHAIR

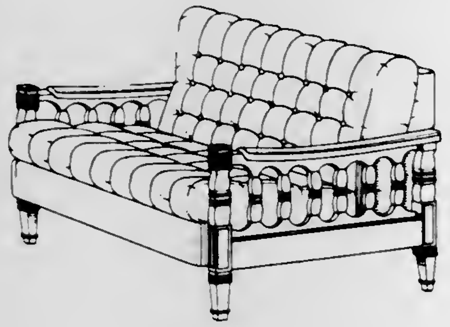
Morris F. Fisher, Carmel, Ind., assignor to Mohasco
Industries, Inc., Amsterdam, N.Y.
Filed Jan. 6, 1971, Ser. No. 104,535
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—39



225,145

LOVESEAT

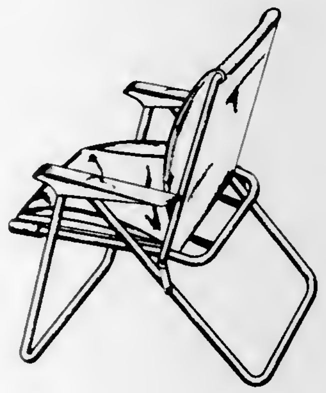
Thomas Winrow, Naperville, Ill., assignor to Futorian
Corporation, Amsterdam, N.Y.
Filed Nov. 30, 1970, Ser. No. 26,207
Term of patent 14 years
The portion of the term of the patent subsequent to
July 19, 1985, has been disclaimed
Int. Cl. D6—*02*
U.S. Cl. D6—63



225,146

ARMCHAIR

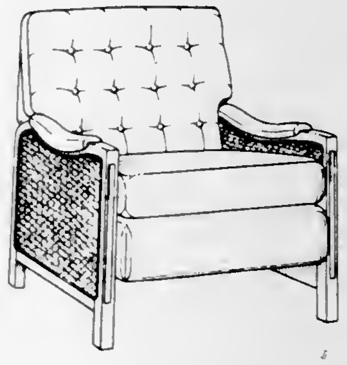
Heinz Kettler, Parsit, via Werl, Germany, assignor to
Heinz Kettler, Parsit, via Werl, Germany
Filed Dec. 8, 1970, Ser. No. 26,346
Claims priority, application Germany June 18, 1970
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—69



225,147

CHAIR

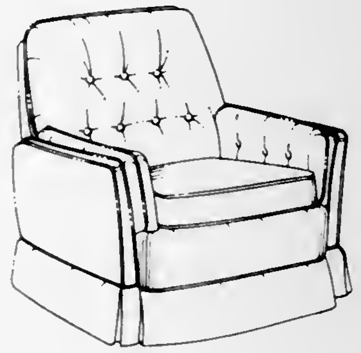
Morris F. Fisher, Carmel, Ind., assignor to Mohasco
Industries, Inc., Amsterdam, N.Y.
Filed Jan. 4, 1971, Ser. No. 103,942
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—71



225,148

CHAIR

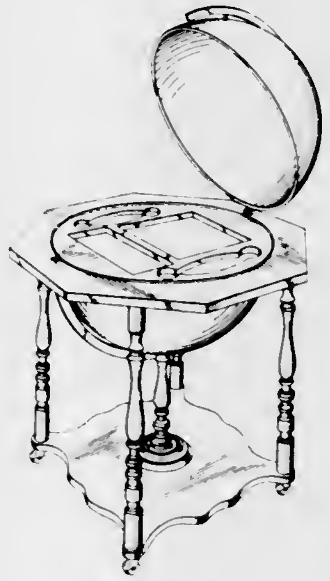
Morris F. Fisher, Carmel, Ind., assignor to Mohasco
Industries, Inc., Amsterdam, N.Y.
Filed Jan. 6, 1971, Ser. No. 104,537
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—71



225,149

COMBINED BEVERAGE CART AND HOUSING FOR AN AUDIO UNIT

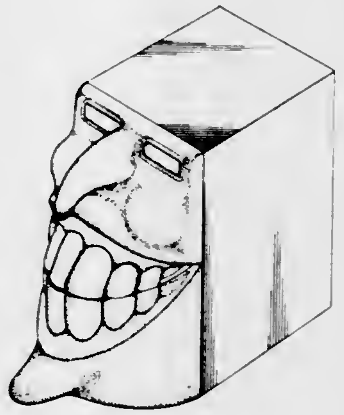
Claudio Palumbo, Milan, Italy, assignor to Phono-Sonic
Radio Corp., Brooklyn, N.Y.
Filed Oct. 15, 1970, Ser. No. 25,516
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—46



225,150

CHEST OF DRAWERS OR SIMILAR ARTICLE

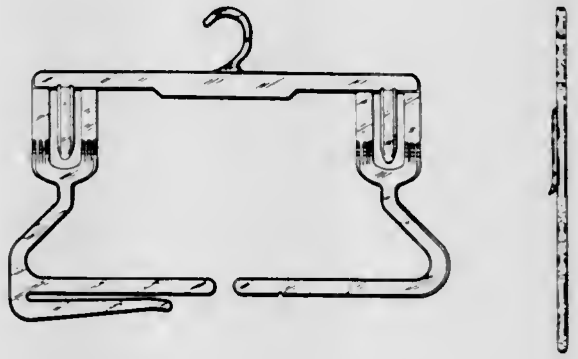
Joseph H. Forrester, 9903 Melgar Drive,
Whittier, Calif. 90601
Filed June 22, 1970, Ser. No. 23,579
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—152



225,151

GARMENT HANGER

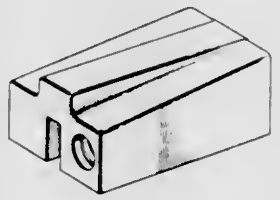
Robert L. Hart, Manhasset Hills, N.Y., assignor to W. R.
Grace & Co., Duncan, S.C.
Filed Mar. 4, 1971, Ser. No. 121,222
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—255



225,152

LOCK FOR WINDOWS AND DOORS

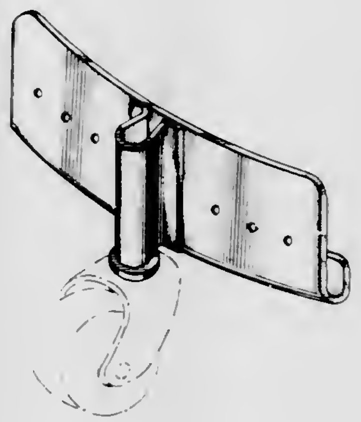
Ruth Robins, El Segundo, Calif., assignor to Packaging
Techniques, Inc., El Segundo, Calif.
Filed Nov. 23, 1970, Ser. No. 26,121
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—150



225,153

TRASH CAN CASTER SUPPORT

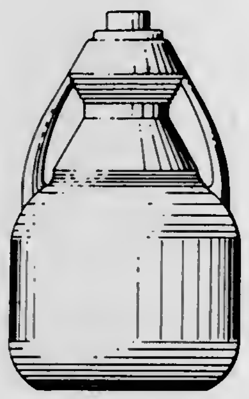
Jimmy J. Richmond, 1801 N. Kingsley Drive,
Hollywood, Calif. 90027
Filed Apr. 22, 1970, Ser. No. 22,556
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—226



225,154
BOTTLE OR SIMILAR ARTICLE

Monroe J. Singer, 3160 NW. 80th Terrace,
Miami, Fla. 33147
Filed July 6, 1971, Ser. No. 160,272
Term of patent 14 years
Int. Cl. D9—*01*

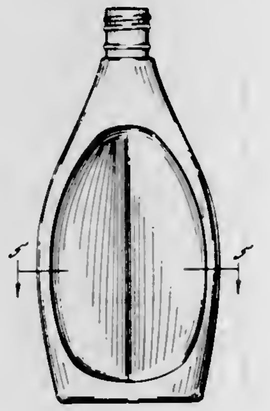
U.S. Cl. D9—48



225,155
BOTTLE

Harold Schafer, Bismarck, N. Dak., assignor to Gold
Seal Company, Bismarck, N. Dak.
Filed Mar. 23, 1971, Ser. No. 127,441
Term of patent 14 years
Int. Cl. D9—*01*

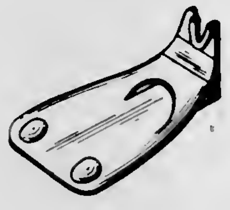
U.S. Cl. D9—143



225,156
POSITIONER FOR POULTRY PRODUCTS AND THE LIKE

Philip L. Reid, Lyman, S.C., assignor to
W. R. Grace & Co., Duncan, S.C.
Filed Dec. 14, 1970, Ser. No. 26,462
Term of patent 14 years
Int. Cl. D15—*08*

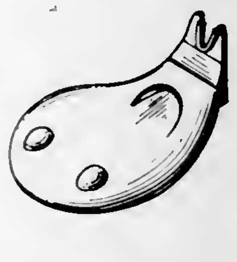
U.S. Cl. D11—1



225,157
POSITIONER FOR POULTRY PRODUCTS AND THE LIKE

Philip L. Reid, Lyman, S.C., assignor to
W. R. Grace & Co., Duncan, S.C.
Filed Dec. 14, 1970, Ser. No. 26,463
Term of patent 14 years
Int. Cl. D15—*08*

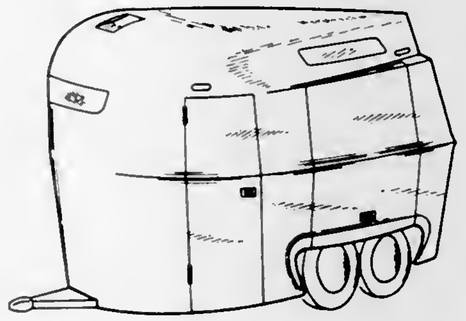
U.S. Cl. D11—1



225,158
STOCK TRAILER

Clinton W. Cole, Stephens, Okla.
(Rte. 1, P.O. Box 92 S, Duncan, Okla. 73533)
Filed Feb. 25, 1971, Ser. No. 119,082
Term of patent 14 years
Int. Cl. D12—*10*

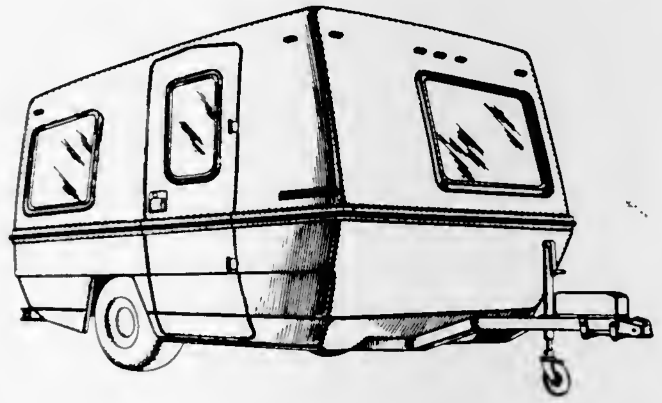
U.S. Cl. D14—3



225,159
TRAILER

Stewart E. Gardner and Ronald J. Bibeau, Bristol, and Charles B. Bonifield, Fort Wayne, Ind., assignors to Gardner, Inc., Bristol, Ind.
Filed May 28, 1971, Ser. No. 148,282
Term of patent 14 years
Int. Cl. D12—*10*

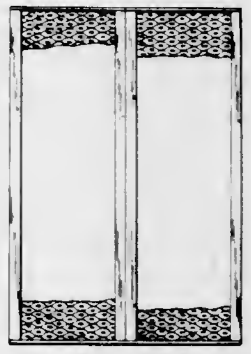
U.S. Cl. D14—3



225,160
FOOT PLATFORM FOR TRUCKS

Earl F. Thomas, 2412 Logan St.,
Des Moines, Iowa 50317
Filed Feb. 19, 1970, Ser. No. 21,509
Term of patent 14 years
Int. Cl. D12—*16*

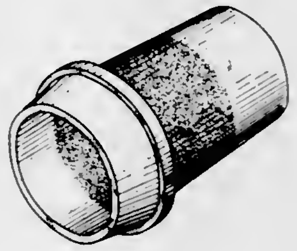
U.S. Cl. D14—6



225,161
COAGULYZER REACTION CUVETTE

David Alan Ritchie, St. Louis, Mo., assignor to Sherwood
Medical Industries Inc., St. Louis, Mo.
Filed Jan. 20, 1971, Ser. No. 108,257
Term of patent 14 years
Int. Cl. D24—*02*

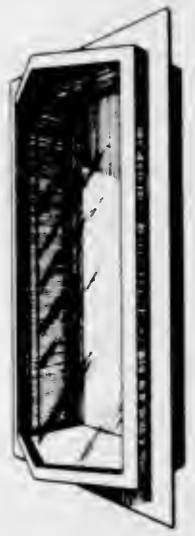
U.S. Cl. D16—1



225,162
FIRE EXTINGUISHER CABINET

John Blendl, Warren, Mich., assignor to Metal Cabinet
Company, Warren, Mich.
Filed May 6, 1971, Ser. No. 141,095
Term of patent 14 years
Int. Cl. D29—*01*

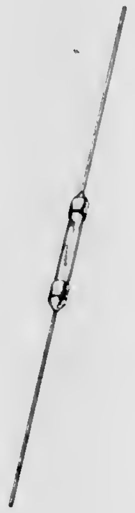
U.S. Cl. D16—2



225,163
ELECTRIC LAMP

Theodore Waddell, Via Rio Torto, Fiesole, Florence, Italy
Filed July 13, 1970, Ser. No. 23,927
Term of patent 14 years
Int. Cl. D26—*04*

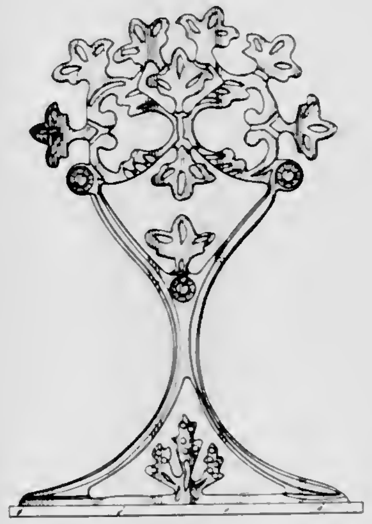
U.S. Cl. D26—8



225,164
RELIGIOUS ORNAMENT

George M. Wallace, 64 Clinton St.,
Paterson, N.J. 07522
Filed Apr. 21, 1971, Ser. No. 136,301
Term of patent 14 years
Int. Cl. D11—*02*

U.S. Cl. D29—23

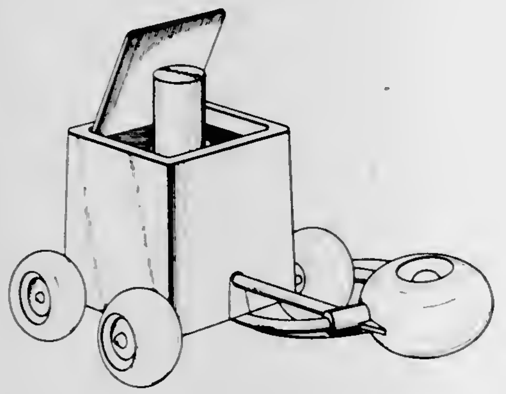


225,165

PULL TOY

Walter P. Doe, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 22, 1971, Ser. No. 117,847
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D34—15

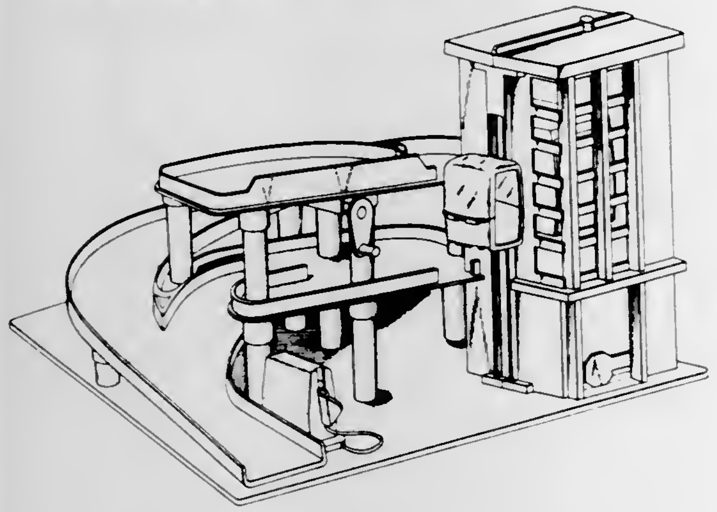


225,166

TOY GARAGE

Duane E. Spengler and George O. Bartoo, West Falls, and John D. Smith, East Aurora, N.Y., assignors to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 22, 1971, Ser. No. 117,848
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D34—15

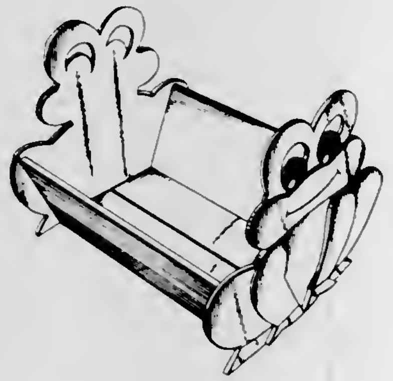


225,167

TOY BOX

Keith W. Billotte, 9116 Edmonston Court,
Greenbelt, Md. 20770
Filed May 14, 1971, Ser. No. 143,719
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D34—15

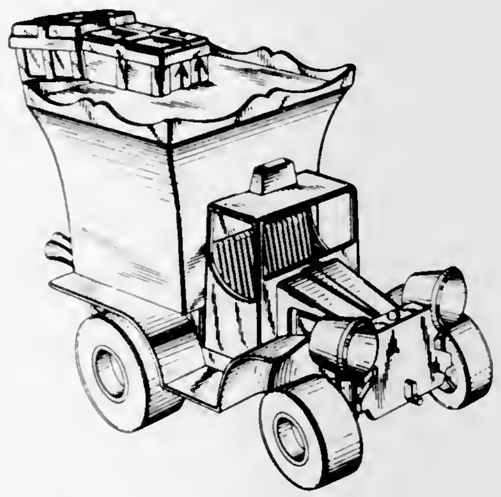


225,168

TOY VEHICLE

Allan Yeoh, Hong Kong, assignor to Louis Marx & Co., Inc.
Filed Sept. 1, 1971, Ser. No. 177,213
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D34—15

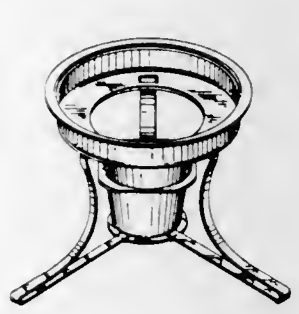


225,169

FONDUE HEATING STAND

John Terrence McGowan, Edina, Minn., assignor to International Multifoods Corp., Minneapolis, Minn.
Filed June 15, 1971, Ser. No. 153,484
Term of patent 14 years
Int. Cl. D7—*02*

U.S. Cl. D44—10

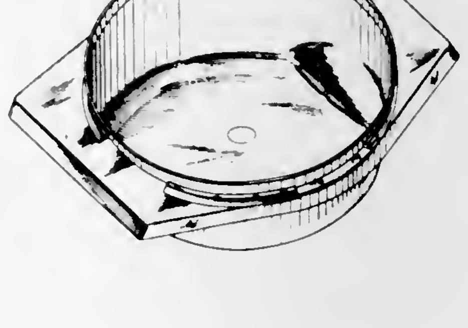


225,170

BOWL

Harold P. Ashton, Providence, and James B. Swett, Barrington, R.I., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Dec. 30, 1970, Ser. No. 26,706
Term of patent 14 years
Int. Cl. D7—*01*

U.S. Cl. D44—15

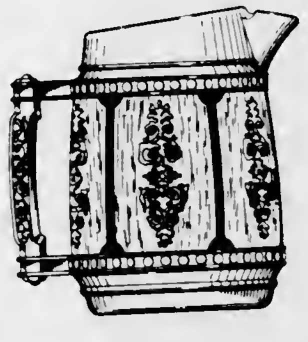


225,171

WATER PITCHER

Sidney Z. Smith, Worcester, Mass., assignor to The General Tire & Rubber Company
Filed Aug. 31, 1971, Ser. No. 176,798
Term of patent 14 years
Int. Cl. D7—*01*

U.S. Cl. D44—21

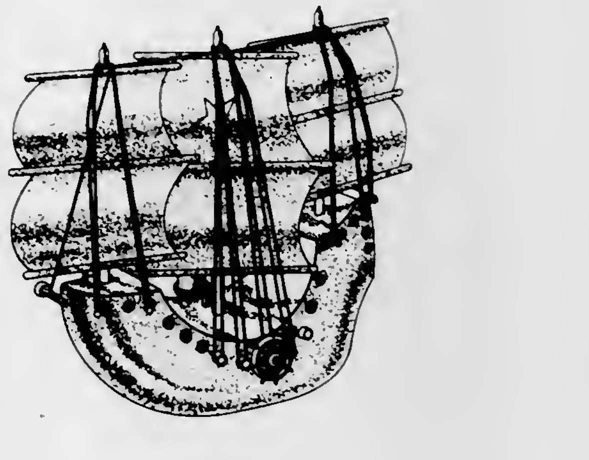


225,172

TELEVISION LAMP

Byon E. Elb, Solano County, Calif. (1825 Sonoma Blvd., Apt. 110, Vallejo, Calif. 94590)
Filed Sept. 23, 1971, Ser. No. 183,301
Term of patent 14 years
Int. Cl. D26—*05*

U.S. Cl. D48—20

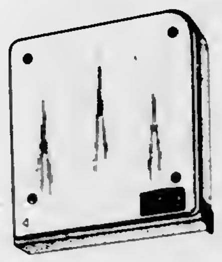


225,173

TAPE MEASURE

André Quenot, Besancon, France, assignor to Manufacture Quenot Mabo, Besancon, France
Filed Jan. 8, 1971, Ser. No. 105,141
Claims priority, application France Oct. 9, 1970
Term of patent 14 years
Int. Cl. D10—*04*

U.S. Cl. D52—1

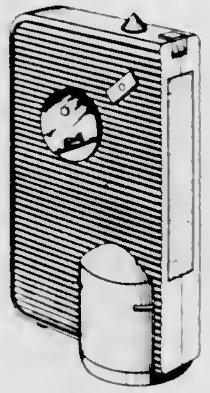


225,174

PLUMBLINE

André Quenot, Besancon, France, assignor to Manufacture Quenot Mabo, Besancon, France
Filed Jan. 8, 1971, Ser. No. 105,142
Claims priority, application France Oct. 9, 1970
Term of patent 14 years
Int. Cl. D10—*05*

U.S. Cl. D52—1

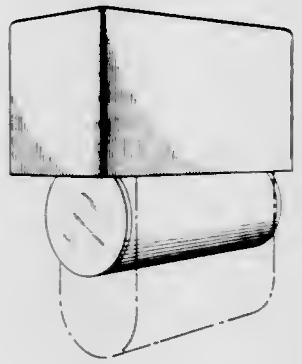


225,175

TOWEL CABINET

Antonio M. Cassia, Milan, Italy, assignor to Steiner Company Lausanne S.A., Lausanne, Switzerland
Filed June 7, 1971, Ser. No. 150,893
Term of patent 14 years
Int. Cl. D6—*06*

U.S. Cl. D52—2

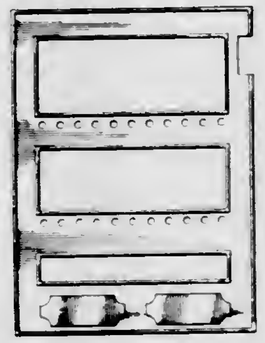


225,176

FRONT PANEL FOR A VENDING MACHINE

David S. Zipp, Los Angeles, Calif.
(14649 Arminta St., Van Nuys, Calif. 91402)
Filed Oct. 26, 1970, Ser. No. 25,664
Term of patent 14 years
Int. Cl. D9—*99*

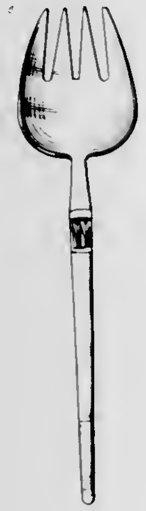
U.S. Cl. D52—3



225,177
ARTICLE OF FLATWARE

Clayton A. Laughlin, Minneapolis, Minn., assignor to Arthur Salm Inc., Chicago, Ill.
Filed May 12, 1969, Ser. No. 17,123
Term of patent 14 years
Int. Cl. D7—*03*

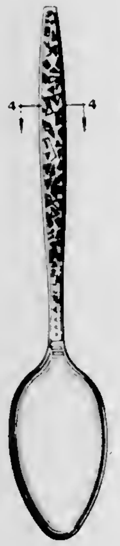
U.S. Cl. D54—12



225,178
SPOON OR SIMILAR ARTICLE

Raymond T. Cleeland, Freehold, N.J., assignor to American Home Products Corporation, New York, N.Y.
Filed May 20, 1971, Ser. No. 116,692
Term of patent 14 years
Int. Cl. D7—*03*

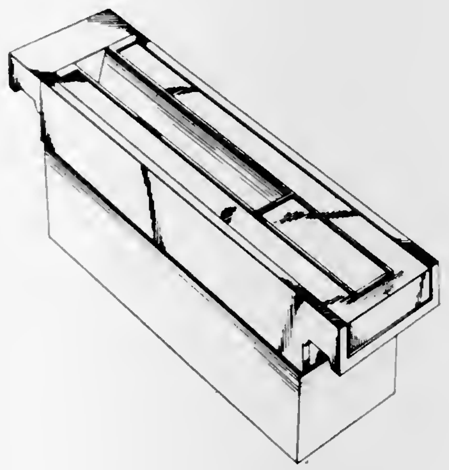
U.S. Cl. D54—12



225,179
PAPER SHREDDER

William Macowski, Caldwell, N.J., assignor to Ketcham & McDougall, Inc., Roseland, N.J.
Filed May 14, 1971, Ser. No. 143,743
Term of patent 14 years
Int. Cl. D18—*99*

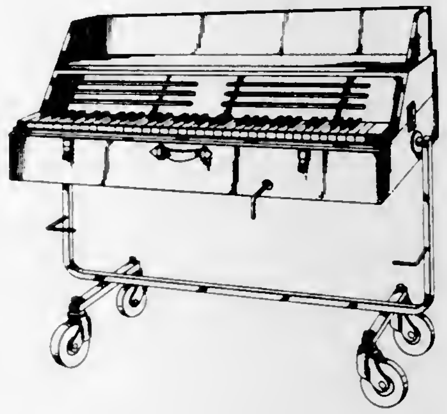
U.S. Cl. D55—1



225,180
PORTABLE PIANO

George H. Weber, Seattle, Wash., and Robert Collins, Los Angeles, Calif., assignors to The Weber Corporation, Seattle, Wash.
Filed Feb. 26, 1971, Ser. No. 119,450
Term of patent 14 years
Int. Cl. D17—*01*

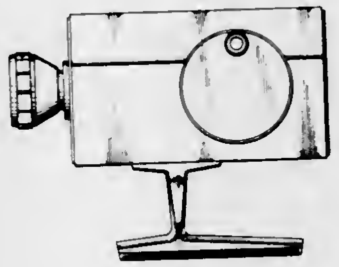
U.S. Cl. D56—9



225,181
MOTION PICTURE VIEWER

James R. Skinner, Cupertino, Mark O. Uitz, Mountain View, and Paul W. Halt, Saratoga, Calif., assignors to F.J.L. Corporation, Mountain View, Calif.
Filed Oct. 5, 1970, Ser. No. 25,323
Term of patent 14 years
Int. Cl. D16—*01*

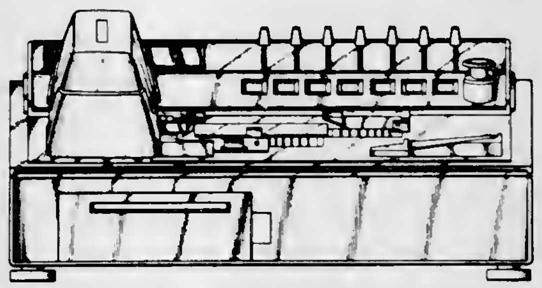
U.S. Cl. D61—1



225,182
PRINTING MACHINE

Yasuaki Yamamoto, Tokyo, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan
Filed June 17, 1971, Ser. No. 153,961
Claims priority, application Japan Feb. 15, 1971
Term of patent 14 years
Int. Cl. D18—*02*

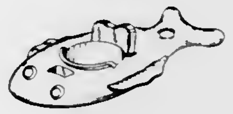
U.S. Cl. D64—11



225,183
BUOYANT INFANT SEAT

Margaret J. Waters, 809 Rural Ave., R.R. 1, Decorah, Iowa 52101
Filed Feb. 8, 1971, Ser. No. 113,778
Term of patent 7 years
Int. Cl. D21—*03*

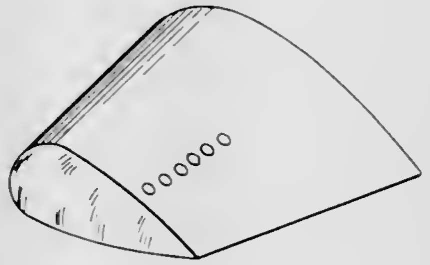
U.S. Cl. D71—1



225,184
COMBUSTION ENGINE MUFFLER

Donald H. Spies, 919 Amherst Lane, Wilmette, Ill. 60091
Filed Dec. 17, 1970, Ser. No. 26,553
Term of patent 14 years
Int. Cl. D15—*01*

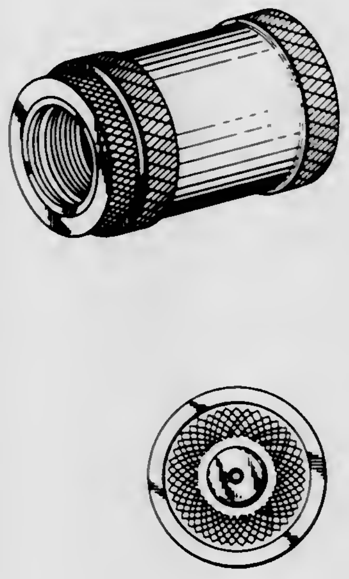
U.S. Cl. D77—1



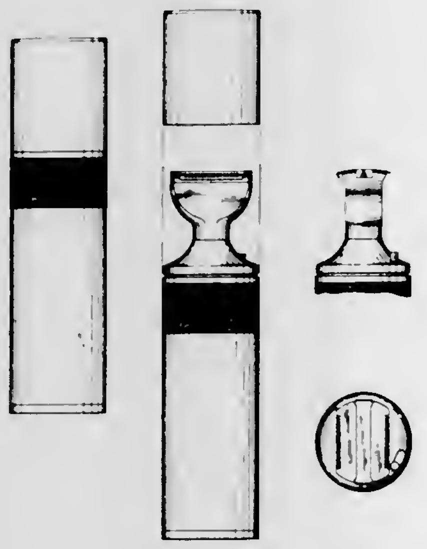
225,185
CLEANING ADAPTER FOR A JET HYPODERMIC INJECTION DEVICE

Benjamin Kittner, Fair Lawn, N.J., assignor to Vernitron Medical Products Inc., Carlstadt, N.J.
Filed June 1, 1971, Ser. No. 149,102
Term of patent 14 years
Int. Cl. D24—*02*

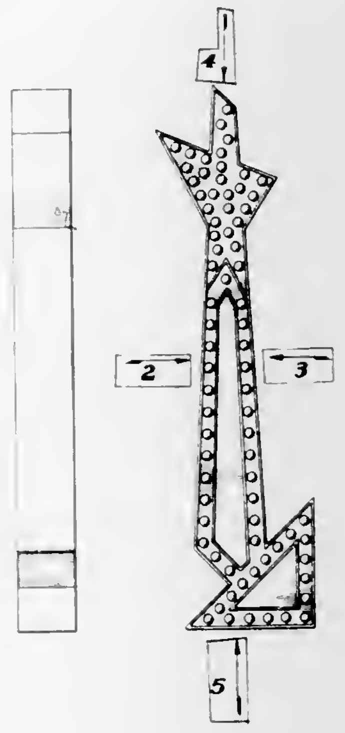
U.S. Cl. D83—12



225,186
ELECTRIC RAZOR
Taisuke Ono and Shima Ito, Osaka, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Feb. 24, 1971, Ser. No. 118,583
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3



225,187
OUTDOOR ILLUMINATED SIGN
Conrad J. Escalante, 852 E. Ocean Ave., Long Beach, Calif. 90802
Filed Sept. 23, 1970, Ser. No. 25,151
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12



LIST OF PATENTEES
TO WHOM
PATENTS WERE ISSUED ON THE 21ST DAY OF NOVEMBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AB Akerlund & Rausing: *See—*
  Silvandersson, Jonnie Thor-Leif, 3,703,252.
AB Spacio System Malmo: *See—*
  Selander, Bror Olle Herbert, 3,703,147.
Abel, William E., to General Motors Corporation. Rotary switch with improved pivotally and reciprocable mounted thumberwheel actuator. 3,703,613, Cl. 200-11.0tw.
Abele, Manfred: *See—*
  Nast, Roland; Kuhle, Engelbert; and Abele, Manfred, 3,703,500.
Abendroth, Paul; and Kaiser, Werner, to Roland Offselmaschinenfabrik Faber and Schleicher AG. Device for sensing and controlling the delivery pile of sheet-fed printing press. 3,703,283, Cl. 271-88.000.
Abrahams, Joseph L., to Rock Fall Company Limited. Method of rock drilling and apparatus for use therein. 3,703,212, Cl. 175-173.000.
Ackermann, Walter Thomas; and Daley, Thomas Joseph, to Scovill Manufacturing Company. Guide for sewing invisible fasteners. 3,703,148, Cl. 112-150.000.
Acron Corporation: *See—*
  Cohen, Herbert I., 3,703,607.
Adkin, William C. Batting practice device. 3,703,286, Cl. 273-26.00e.
Adkins, Frank M.: *See—*
  Smith, Max D.; and Adkins, Frank M., 3,703,287.
AGA Aktiebolag: *See—*
  Ekstrom, Staffan Walter, 3,703,191.
Agnone, John L.; Fister, Robert V.; and Sheppard, Jon C., to Eastman Kodak Company. D. C. sputtering of particulate polymeric compounds onto a substrate. 3,703,585, Cl. 204-192.000.
Aichilithic Company, The: *See—*
  Winn, James Buchanan, Jr., 3,703,264.
Airco, Inc.: *See—*
  Hay, Wayne W., 3,703,172.
Aisin Seiki Kabushika Kaisha: *See—*
  Komatsu, Noboru; Suzuki, Takatoshi; Ito, Takuo; Hara, Yoshiteru; and Asakura, Kouichi, 3,703,093.
Akerstrom, Gary L.: *See—*
  Klett, George G.; and Akerstrom, Gary L., 3,703,058.
Aktiebolaget Vibro-Verken: *See—*
  Fransson, Johnny, 3,703,128.
Albanese, Victor J.; Johnson, Arthur E.; and Dietz, Charles L., to Grumman Aerospace Corporation. Portable passive reflector. 3,703,723, Cl. 343-18.00d.
Alberto-Culver Company: *See—*
  Cella, John A.; and Schmitt, William H., 3,703,578.
Alburn, Harvey E.; Clark, Donald E.; Grant, Norman H.; and Lapidus, Milton, to American Home Products Corporation. Hydroxamic acid derivatives of 1-aminocyclohexanecarboxylic acid. 3,703,542, Cl. 260-500.50h.
Alburn, Harvey E.; Clark, Donald E.; Grant, Norman H.; and Lapidus, Milton, to American Home Products Corporation. Hydroxamic acids of alicyclic amono acids. 3,703,543, Cl. 260-500.50h.
Alessio, Sergio A.; Chow, Weichien; and Kosem, Marion, to Bunker-Ramo Corporation, The. Combined component and interconnection module and method of making. 3,703,033, Cl. 29-624.000.
Allegheny Ludlum Industries, Inc.: *See—*
  Esler, Donald F.; and Choby, Edward G., Jr., 3,703,419.
Allemand, Robert; Brey, Christian; and Jacobe, Jean, to Commissariat a l'Energie Atomique. Ionization radiation detector system for determining position of the radiation. 3,703,638, Cl. 250-83.60r.
Allen, Philip J., to United States of America, Navy. Optical rotary joint. 3,703,330, Cl. 350-157.000.
Allmanna Svenka Elektriska Aktiebolaget: *See—*
  Thorborg, Kjeld, 3,703,644.
Allmanna Svenska Elektriska Aktiebolaget: *See—*
  Bylund, Per-Ake; Farkas, Tibor; and Andersson, Nils Eric, 3,703,668.
  Frank, Kjell, 3,703,676.
  Frank, Kjell; and Johansson, Lennart, 3,703,680.
  Isaksson, Sven-Erik, 3,703,278.
Alric, Andre A. L.; Porte, Gilbert R. A.; Glotin, Joseph M. H.; Higounenq, Francis J.; and Boussin, Serge P., to Societe Nationale Industrielle Aerospatiale. Floating battery charging network. 3,703,675, Cl. 320-31.000.
Alsup, Michael John; and Guevara, Alfredo Ruben, to Eastman Kodak Company. Processes and elements for preparation of photomechanical images. 3,703,373, Cl. 96-35.000.
Alterton, Lloyd E.: *See—*
  Vassiliadis, Arthur; Zweng, Harold C.; Peppers, Norman A.; and Alterton, Lloyd E., 3,703,176.
Altmann, Conrad: *See—*
  Drexler, Rodger A.; and Altmann, Conrad, 3,703,395.
Aluminum Company of America: *See—*
  Wilson, Richard c., 3,703,290.
Alympus Optical Co., Ltd.: *See—*
  Ouchi, Teruo, 3,703,169.
Amass, Allan John: *See—*
  Duck, Edward William; Locke, John Michael; and Amass, Allan John, 3,703,566.
Amchem Products, Inc.: *See—*
  Leaper, Joseph Michael Faraday; and Raman, Harvey Peter John, 3,703,546.
American Can Company: *See—*
  Kuchenbecker, Morris William, 3,703,383.
American Filtrons Corporation, mesne: *See—*
  Berger, Richard M.; and Brooks, Elwin W., 3,703,429.
American Home Products Corporation: *See—*
  Alburn, Harvey E.; Clark, Donald E.; Grant, Norman H.; and Lapidus, Milton, 3,703,542.
  Alburn, Harvey E.; Clark, Donald E.; Grant, Norman H.; and Lapidus, Milton, 3,703,543.
  Kim, Dong H.; and Santilli, Arthur A., 3,703,516.
  Kim, Dong H.; and Santilli, Arthur A., 3,703,517.
American Metal Climax Inc.: *See—*
  Farr, John Peter George; and Rowe, Geoffrey Whaley, 3,703,449.
  McKinney, John S., 3,703,062.
American Standard Inc.: *See—*
  Nelden, Richard M.; and Ryan, Thomas J., 3,703,078.
American Thermostat Corporation: *See—*
  Levinn, Robert N., 3,703,693.
Ames Sidney W.: *See—*
  Staudacher, Gerald R.; and Ames Sidney W., 3,703.192.
Amoco Production Company: *See—*
  Shanks, John L., 3,703,632.
AMP Incorporated: *See—*
  Demler, Henry William, Sr., 3,703,302.
  Henschen, Homer Ernst; and Zell, Dale Richard, 3,703,604.
  Heyden, Vander; and Ernest, Eric, 3,703,627.
  Swengel, Robert Charles, Sr., 3,703,623.
  Zimmerman, John Aaron, Jr., 3,703,701.
Analysis system employing a plural chamber cuvette: *See—*
  Rosse, Thomas A.; Blackmer, David E.; Zindler, Jerrold; and Kelley, Thomas F., 3,703,336.
Anderson, Charles I. Rotary blade for mulching lawn mower. 3,703,071, Cl. 56-295.000.
Anderson, George J.; and Dahms, Wilbraham-Ronald, to Monsanto Company. Resolve varnishes wherein phenol is alkylated with a dicyclopentadiene-containing mixture and then condensed with formaidettyde to produce the resole. 3,703,494, Cl. 260-29.300.
Anderson, Harvey J.: *See—*
  Brenner, Abner; and Anderson, Harvey J., 3,703,405.
Anderson, Lawrence K.; Feldman, Martin; and Pinnow, Douglas Arthur, to Bell Telephone Laboratories, Incorporated. High-speed printing apparatus. 3,703,137, Cl. 95-4.50r.
Andersson, Nils Eric: *See—*
  Bylund, Per-Ake; Farkas, Tibor; and Andersson, Nils Eric, 3,703,668.
Andree, Walter: *See—*
  Budich, Wolfgang; Theissen, Hans; Schaefer, Hans; and Andree, Walter, 3,703,063.
Andrews, Maurice. Remote alarm system. 3,703,714, Cl. 340-224.000.
Antonen, Robert C.; Kookootsedes, Gust J.; and Field, Arthur J., to Dow Corning Corporation. Sulfonic acid containing organopolysiloxane compositions. 3,703,562, Cl. 260-825.500.
Aoki, Mithuzi: *See—*
  Kiyomiya, Hiromoto; Fukumiya, Yukio; Aoki, Mithuzi; and Mama, Hiromichi, 3,703,611.
Aono, Shigeo, to Nisson Motor Company, Limited. Fuel shutoff device for internal combustion engine. 3,703,162, Cl. 123-32.0ea.
Aoyagi, Takanobu: *See—*
  Takayama, Yuzi; Ichimura, Yutaka; Minmmi, Shunsuke; Aoyagi, Takanobu; and Takeda, Fumio, 3,703,491.
Arai, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Air bag safety device for vehicle passengers. 3,703,702, Cl. 340-52.00r.
Araujo, Roger J.; Sawchuk, Loris G.; and Seward, Thomas P., III, to Corning Glass Works. High refractive index photochromic glasses. 3,703,388, Cl. 106-47.00r.
Armour-Dial, Inc.: *See—*
  Zakaria, Moneeb; Raphaelian, Leo A.; Taber, David; and Brown, James, Jr., 3,703,471.
Armstrong Cork Company: *See—*
  Harris, Thomas G., 3,703,498.
Arnold, Soodalter. Sleeving apparatus. 3,703,065, Cl. 53-197.000.
Arntson, Gary L.; and Rasmussen, Tom, to General Motors Corporatirn. Steering column assembly. 3,703,106, Cl. 74-492.000.

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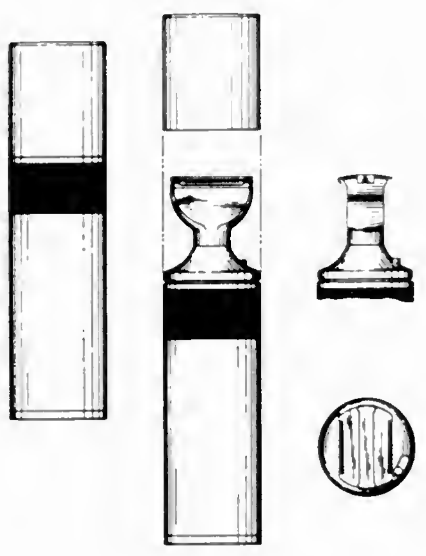

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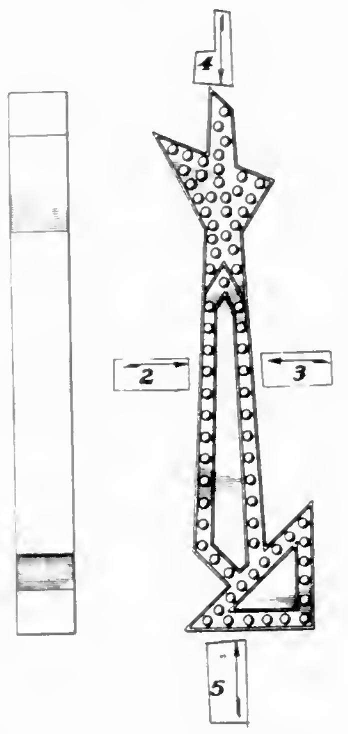

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- Adkins, Frank M.: *See—*
  - Smith, Max D.; and Adkins, Frank M., 3,703,287.
- AGA Aktiebolag: *See—*
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  - Hay, Wayne W., 3,703,172.
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  - Komatsu, Noboru; Suzuki, Takatoshi; Ito, Takuo; Hara, Yoshiteru; and Asakura, Kouichi, 3,703,093.
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  - Klett, George G.; and Akerstrom, Gary L., 3,703,058.
- Aktiebolaget Vibro-Verken: *See—*
  - Fransson, Johnny, 3,703,128.
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- Alessio, Sergio A.; Chow, Weichien; and Kosem, Marion, to Bunker-Ramo Corporation, The. Combined component and interconnection module and method of making. 3,703,033, Cl. 29-624.000.
- Allegheny Ludlum Industries, Inc.: *See—*
  - Esler, Donald F.; and Choby, Edward G., Jr., 3,703,419.
- Allemand, Robert; Brey, Christian; and Jacobe, Jean, to Commissariat a l'Energie Atomique. Ionization radiation detector system for determining position of the radiation. 3,703,638, Cl. 250-83.60r.
- Allen, Philip J., to United States of America, Navy. Optical rotary joint. 3,703,330, Cl. 350-157.000.
- Allmanna Svenka Elektriska Aktiebolaget: *See—*
  - Thorborg, Kjeld, 3,703,644.
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  - Bylund, Per-Ake; Farkas, Tibor; and Andersson, Nils Eric, 3,703,668.
  - Frank, Kjell, 3,703,676.
  - Frank, Kjell; and Johansson, Lennart, 3,703,680.
  - Isaksson, Sven-Erik, 3,703,278.
- Alric, Andre A. L.; Porte, Gilbert R. A.; Glotin, Joseph M. H.; Higounenq, Francis J.; and Boussin, Serge P., to Societe Nationale Industrielle Aerospatiale. Floating battery charging network. 3,703,675, Cl. 320-31.000.
- Alsup, Michael John; and Guevara, Alfredo Ruben, to Eastman Kodak Company. Processes and elements for preparation of photomechanical images. 3,703,373, Cl. 96-35.000.
- Alterton, Lloyd E.: *See—*
  - Vassiliadis, Arthur; Zweng, Harold C.; Peppers, Norman A.; and Alterton, Lloyd E., 3,703,176.
- Altmann, Conrad: *See—*
  - Drexler, Rodger A.; and Altmann, Conrad, 3,703,395.
- Aluminum Company of America: *See—*
  - Wilson, Richard c., 3,703,290.
- Alympus Optical Co., Ltd.: *See—*
  - Ouchi, Teruo, 3,703,169.
- Amass, Allan John: *See—*
  - Duck, Edward William; Locke, John Michael; and Amass, Allan John, 3,703,566.
- Amchem Products, Inc.: *See—*
  - Leaper, Joseph Michael Faraday; and Raman, Harvey Peter John, 3,703,546.
- American Can Company: *See—*
  - Kuchenbecker, Morris William, 3,703,383.
- American Filtrons Corporation, mesne: *See—*
  - Berger, Richard M.; and Brooks, Elwin W., 3,703,429.
- American Home Products Corporation: *See—*
  - Alburn, Harvey E.; Clark, Donald E.; Grant, Norman H.; and Lapidus, Milton, 3,703,542.
  - Alburn, Harvey E.; Clark, Donald E.; Grant, Norman H.; and Lapidus, Milton, 3,703,543.
  - Kim, Dong H.; and Santilli, Arthur A., 3,703,516.
  - Kim, Dong H.; and Santilli, Arthur A., 3,703,517.
- American Metal Climax Inc.: *See—*
  - Farr, John Peter George; and Rowe, Geoffrey Whaley, 3,703,449.
  - McKinney, John S., 3,703,062.
- American Standard Inc.: *See—*
  - Nelden, Richard M.; and Ryan, Thomas J., 3,703,078.
- American Thermostat Corporation: *See—*
  - Levinn, Robert N., 3,703,693.
- Ames Sidney W.: *See—*
  - Staudacher, Gerald R.; and Ames Sidney W., 3,703,192.
- Amoco Production Company: *See—*
  - Shanks, John L., 3,703,632.
- AMP Incorporated: *See—*
  - Demler, Henry William, Sr., 3,703,302.
  - Henschen, Homer Ernst; and Zell, Dale Richard, 3,703,604.
  - Heyden, Vander; and Ernest, Eric, 3,703,627.
  - Swengel, Robert Charles, Sr., 3,703,623.
  - Zimmerman, John Aaron, Jr., 3,703,701.
- Analysis system employing a plural chamber cuvette: *See—*
  - Rosse, Thomas A.; Blackmer, David E.; Zindler, Jerrold; and Kelley, Thomas F., 3,703,336.
- Anderson, Charles I. Rotary blade for mulching lawn mower. 3,703,071, Cl. 56-295.000.
- Anderson, George J.; and Dahms, Wilbraham-Ronald, to Monsanto Company. Resolve varnishes wherein phenol is alkylated with a dicyclopentadiene-containing mixture and then condensed with formaidettyde to produce the resole. 3,703,494, Cl. 260-29.300.
- Anderson, Harvey J.: *See—*
  - Brenner, Abner; and Anderson, Harvey J., 3,703,405.
- Anderson, Lawrence K.; Feldman, Martin; and Pinnow, Douglas Arthur, to Bell Telephone Laboratories, Incorporated. High-speed printing apparatus. 3,703,137, Cl. 95-4.50r.
- Andersson, Nils Eric: *See—*
  - Bylund, Per-Ake; Farkas, Tibor; and Andersson, Nils Eric, 3,703,668.
- Andree, Walter: *See—*
  - Budich, Wolfgang; Theissen, Hans; Schaefer, Hans; and Andree, Walter, 3,703,063.
- Andrews, Maurice. Remote alarm system. 3,703,714, Cl. 340-224.000.
- Antonen, Robert C.; Kookootsedes, Gust J.; and Field, Arthur J., to Dow Corning Corporation. Sulfonic acid containing organopolysiloxane compositions. 3,703,562, Cl. 260-825.500.
- Aoki, Mithuzi: *See—*
  - Kiyomiya, Hiromoto; Fukumiya, Yukio; Aoki, Mithuzi; and Mama, Hiromichi, 3,703,611.
- Aono, Shigeo, to Nisson Motor Company, Limited. Fuel shutoff device for internal combustion engine. 3,703,162, Cl. 123-32.0ea.
- Aoyagi, Takanobu: *See—*
  - Takayama, Yuzi; Ichimura, Yutaka; Minmmi, Shunsuke; Aoyagi, Takanobu; and Takeda, Fumio, 3,703,491.
- Arai, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Air bag safety device for vehicle passengers. 3,703,702, Cl. 340-52.00r.
- Araujo, Roger J.; Sawchuk, Loris G.; and Seward, Thomas P., III, to Corning Glass Works. High refractive index photochromic glasses. 3,703,388, Cl. 106-47.00r.
- Armour-Dial, Inc.: *See—*
  - Zakaria, Moneeb; Raphaelian, Leo A.; Taber, David; and Brown, James, Jr., 3,703,471.
- Armstrong Cork Company: *See—*
  - Harris, Thomas G., 3,703,498.
- Arnold, Soodalter. Sleeving apparatus. 3,703,065, Cl. 53-197.000.
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- Aron-Samuel, Jan Marcel Didier; and Sterne, Jean Jacques. 1,3,5-Triazines. 3,703,514, Cl. 260-249.900.
- Arrance, Frank C., to McDonnell Douglas Corporation. Flexible inorganic fibers and battery electrode containing same. 3,703,413 Cl. 136-6.000.
- Arrow-Hart, Inc.: *See—*
  - Bullock, John W., 3,703,694.
- Arvin Industries, Inc.: *See—*
  - Vogel, John D.; and Canfield, William N., 3,703,288.
- Asada, Shuzi: *See—*
  - Ogata, Nobutaka; Kumamoto, Riyouzi; and Asada, Shuzi, 3,703,043.
- Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
  - Honda, Makoto; Tanaka, Kyugo; and Watanabe, Itaru, 3,703,548.
- Asakura, Kouichi: *See—*
  - Komatsu, Noboru; Suzuki, Takatoshi; Ito, Takuo; Hara, Yoshiteru; and Asakura, Kouichi, 3,703,093.
- Ashby, Frederick R.: *See—*
  - Luebs, Donald F.; and Ashby, Frederick R., 3,703,198.
- Atlantic Richfield Company: *See—*
  - Hersh, Harold R.; and Sauer, Richard W., 3,703,490.
- Atlas Engineering Products, Inc.: *See—*
  - Losee, Walter J., 3,703,304.
- Audio Alert Corporation: *See—*
  - Goodwater, Harry C., 3,703,721.
- Austin, Glenn M.: *See—*
  - Seiferth, Oscar E.; and Austin, Glenn M., 3,703,384.
- Auto-Valve, Inc.: *See—*
  - Koller, Floyd G., 3,703,189.
- Automobiles Peugeot: *See—*
  - Pernoud, Claude, 3,703,141.
  - Piret, Jean, 3,703,107.
  - Remaud, Jacques C.; and Bouthors, Pierre, 3,703,320.
- Aykens, Hein: *See—*
  - Holland, John P.; and Aykens, Hein, 3,703,061.
- Aylott, Eric Victor, to Eylure Limited. Devices for applying beauty aids to the person. 3,703,180, Cl. 132-88.700.
- Baba, Shigeji: *See—*
  - Sakazume, Kaiichiro; Sakamoto, Eiichi; Itoh, Shigemasa; Fujimori, Noboru; and Baba, Shigeji, 3,703,377.
- Babel, Louis, to Creusot-Loire. Ladle for inductive treatment. 3,703,601, Cl. 13-27.000.
- Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
  - Falkenstein, Georg; Peine, Hans Georg; Doerfel, Helmut; Raff, Paul; and Schuster, Ludwig, 3,703,595.
  - Graefje, Heinz; and Flickinger, Erich, 3,703,444.
  - Marx, Matthias; Becker, Ernst; and Spoor, Herbert, 3,703,596.
- Baker Oil Tools, Inc.: *See—*
  - Kammerer, Archer W., Jr.; and Johnson, Gary R., 3,703,213.
- Bakewell, Joseph J., to Dynamics Research Corporation. Method of making precision conductive mesh patterns. 3,703,450, Cl. 204-11.000.
- Balaguer, Rodolio Rodriguez. Outboard motor unit. 3,703,642, Cl. 290-43.000.
- Balz, Helmut, GmbH: *See—*
  - Balz, Jurgen, 3,703,673.
- Balz, Jurgen, to Balz, Helmut, GmbH. Power driven positioning apparatus with force dependent shut-off, to position an engagement element against an abutment. 3,703,673, Cl. 318-468.000.
- Barker, Graham; and Campbell, Herman W., to Witco Chemical Corporation. Aqueous-based cosmetic detergent compositions. 3,703,481, Cl. 252-546.000.
- Barnard, Mark Cary Sedgwick, to Leyland Gas Turbines Limited. Thermal regenerators. 3,703,206, Cl. 165-9.000.
- Barnett, Allen M.; Galginaitis, Simeon V.; and Heumann, Frederick K., to General Electric Company. Monolithic semiconductor display devices. 3,703,656, Cl. 313-108.00d.
- Baron, Frank A., to Mallinckrodt Chemical Works. Purification of p-aminophenol. 3,703,598, Cl. 260-575.000.
- Barone, Antonio C.; and Jasinski, Stephen. Micro adjustable shooters' tripod. 3,703,046, Cl. 42-94.000.
- Bartch, Donald Walter: *See—*
  - Deal, Samuel Broughton; and Bartch, Donald Walter, 3,703,401.
- Basov, Jury Georgievich: *See—*
  - Sysun, Viktor Viktorovich; Skvortsov, Boris Vasilievich; Basov, Jury Georgievich; and Roldugin, Vladimir Ivanovich, 3,703,658.
- Batista, Roy I., to TRW Inc. Diffusion bonding process. 3,703,032, Cl. 29-493.500.
- Bauer, David L.: *See—*
  - Surls, Joseph P.; Bauer, David L.; and West, Ben F., 3,703,357.
- Bauer, Rudolf: *See—*
  - Walther, Gerhard; Bauer, Rudolf; Schulz, Werner; and Sirrenberg, Walther, 3,703,523.
- Bauerman, W. & Sohne GmbH: *See—*
  - Uthemann, Wolfgang; and Zimmermann, Richard (said Uthemann assor. to), 3,703,182.
- Beach, David E., to Eastman Kodak Company. Electric generator drive mechanism. 3,703,132, Cl. 95-11.500.
- Beaubien, Laurent A.: *See—*
  - Mast, Phillip W.; and Beaubien, Laurent A., 3,703,012.
- Beaubien, Thomas S., 1/2 to Johnson, Miller C. Whirling toy. 3,703,049, Cl. 46-47.000.
- Beck, Charles I.: *See—*
  - Cummisford, Patricia D.; and Beck, Charles I., 3,703,379.
- Beck, Manfred: *See—*
  - Sutter, Hubert; and Beck, Manfred, 3,703,567.
- Becker, Ernst: *See—*
  - Marx, Matthias; Becker, Ernst; and Spoor, Herbert, 3,703,596.
- Becking, Donald H.: *See—*
  - Clauss, Richard J.; Tremmel, Robert; and Becking, Donald H., 3,703,448.
- Bedford, Raymond E.: *See—*
  - Kesten, Patrick N.; Webb, Richard A.; and Bedford, Raymond E., 3,703,387.
- Beegle, Donald W.: *See—*
  - Salmon, David; Wierzbicki, Edward J.; Langston, Benny; and Beegle, Donald W., 3,703,340.
- Belasco, Melvin; and Borrello, Sebastian R., to Texas Instruments, Incorporated. Photosensitive semiconductor device. 3,703,408, Cl. 117-212.000.
- Bell & Howell Company: *See—*
  - Gaynor, Joseph, 3,703,143.
- Bell, John B.: *See—*
  - Malkemus, John D.; and Bell, John B., 3,703,538.
- Bell Telephone Laboratories, Inc.: *See—*
  - Weller, David Reis, 3,703,678.
- Bell Telephone Laboratories, Incorporated: *See—*
  - Anderson, Lawrence K.; Feldman, Martin; and Pinnow, Douglas Arthur, 3,703,137.
  - Bobeck, Andrew Henry; and Scovil, Henry Evelyn Derrick, 3,703,712.
  - Dembiak, Matthew R.; and Webster, George H. (said Webster assor to), 3,703,605.
  - Ebbe, Grace Lakin; and Marki, Gustav Paul, 3,703,610.
  - Flanagan, James Loton, 3,703,688.
  - Glass, Alastair Malcolm; and Peterson, George Earl, 3,703,328.
  - Knowlton, Kenneth Charles, 3,703,727.
  - Maydan, Dan, 3,703,687.
- Bellasalma, Gerlad J., to Plastetics, Inc. Method of forming a mold and casting shallow articles therein. 3,703,572, Cl. 264-92.000.
- Belorussky Institut Perelivania Krovi: *See—*
  - Dovgalev, Stepan Ilich; Ermolenko, Igor Nikolaevich; Buglov, Evgeny Danilovich; Danilov, Ivan Petrovich; and Longin, Mikail Lvovich, 3,703,438.
- Benavides, Augusto E.: *See—*
  - Delmonte, John; Meadows, Paul L.; and Benavides, Augusto E., 3,703,425.
- Bendix Corporation, The: *See—*
  - Cripe, Maxwell L., 3,703,077.
- Bendler, Hellmut: *See—*
  - Gawlick, Heinz; Bendler, Hellmut; and Hubsch, Gunter, 3,703,121.
- Berger, Richard M.; and Brooks, Elwin W., to American Filtrons Corporation, mesne. Apparatus for making filter means. 3,703,429, Cl. 156-441.500.
- Berman, Herbert L., to Optical Coating Laboratory. Infrared intrusion detector system. 3,703,718, Cl. 340-258.00d.
- Bernaerts, Henry J., to United States of America, Navy. Propeller with after-collision propulsion capability. 3,703,211, Cl. 115-34.00r.
- Bernholz, Edward L.: *See—*
  - Hemming, Charles B.; and Bernholz, Edward L., 3,703,394.
- Beroff, Howard; and Richmond, Ernest L., to Ethicon, Inc. Electropolishing of drilled surgical needles. 3,703,452, Cl. 204-129.100.
- Beyer, Henry R.; Long, Thomas F.; and De Sipio, Richard G., to United States of America, Navy. Sequence matrix. 3,703,719, Cl. 340-347.0dd.
- Bhuta, Pravin G.; Johnson, Robert L.; and Graham, Douglas J., to TRW Inc. Surface tension method of and apparatus for separating immiscible liquids. 3,703,463, Cl. 210-23.000.
- Biddle, Bilburn Emmett. Pet-tender. 3,703,160, Cl. 119-121.000.
- Bird, Brian Michael; and Rawcliffe, Gordon Hindle, to National Research Development Corporation. Three-phase, induction-motor, speed-changing method and control circuit. 3,703,672, Cl. 318-227.000.
- Birrer, George W.: *See—*
  - Rosa, Albert G.; and Birrer, George W., 3,703,417.
- Black, Rexford E.: *See—*
  - Read, Benjamin Hays; and Black, Rexford E., 3,703,458.
- Blackmer, David E.: *See—*
  - Rosse, Thomas A.; Blackmer, David E.; Zindler, Jerrold; and Kelley, Thomas F., 3,703,336.
- Bliss & Laughlin Industries, Inc.: *See—*
  - Skupas, John A.; and Godwin, Robert H., 3,703,020.
- Bliss & Laughlin Industries, Incorporated: *See—*
  - Ciepley, Ted, 3,703,683.
- Blowers, William L., to Kollmorgen Corporation. Temperature-controlled integrated circuits. 3,703,651, Cl. 307-310.000.
- Blueberry Equipment, Inc.: *See—*
  - Patzlaff, Albert W., 3,703,072.
- Blytas, George C., to Shell Oil Company. Process for extracting copper, cobalt and nickel values from aqueous solution. 3,703,573, Cl. 423-24.000.
- Bobeck, Andrew Henry; and Scovil, Henry Evelyn Derrick, to Bell Telephone Laboratories, Incorporated. Mass memory organization. 3,703,712, Cl. 340-174.0tf.
- Boehm, Otto; and Scholz, Werner, to Werkzeugbau GmbH. Rock drilling bit. 3,703,214, Cl. 175-395.000.
- Boehringer Ingelheim G.m.b.H.: *See—*

  - Walther, Gerhard; Bauer, Rudolf; Schulz, Werner; and Sirrenberg, Walther, 3,703,523.
- Boone, John J.: *See—*
  - Samler, Lee F.; and Boone, John J., 3,703,197.
- Booth, Jack J. Dispensing valve. 3,703,187, Cl. 137-114.000.
- Borden, Inc.: *See—*
  - Bretch, Edward E., 3,703,378.
- Bordenca, Carl, to SCM Corporation. Terphenylamino ethers and thioethers. 3,703,554, Cl. 260-583.0ee.
- Borg-Warner Corporation: *See—*
  - Wise, George L.; and Russ, Mark A., 3,703,305.
- Borrello, Sebastian R.: *See—*
  - Belasco, Melvin; and Borrello, Sebastian R., 3,703,408.
- Bosch, Robert, G.m.b.H.: *See—*
  - Messerschmidt, Friedrich, 3,703,184.
- Bose, Otindra Nath, to English Sewing Limited. Method of making a yarn containing loops. 3,703,075, Cl. 57-157.00r.
- Bosquain, Maurice; Bourjot, Marcel; and Kirsch, Maurice, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitatirn des Procedes Georges Claude. Method for manufacturing very large heat exchangers. 3,703,028, Cl. 29-157.30r.
- Bosshard, Ulrich Walter, to Holderbank Management & Consulting Ltd. Cooling apparatus for the outlet of a rotary kiln. 3,703,277, Cl. 263-44.000.
- Botsford, Charles E.: *See—*
  - Poling, Ezar C.; and Botsford, Charles E., 3,703,428.
- Boudakian, Max M., to Olin Corporation. Method for the preparation of stable 4-fluoropyridine salts. 3,703,521, Cl. 260-290.0hl.
- Bourjot, Marcel: *See—*
  - Bosquain, Maurice; Bourjot, Marcel; and Kirsch, Maurice, 3,703,028.
- Boussin, Serge P.: *See—*
  - Alric, Andre A. L.; Porte, Gilbert R. A.; Glotin, Joseph M. H.; Higounenq, Francis J.; and Boussin, Serge P., 3,703,675.
- Bouthors, Pierre: *See—*
  - Remaud, Jacques C.; and Bouthors, Pierre, 3,703,320.
- Bovett, Duane E., to Burroughs Corporation. Dual clock memory access control. 3,703,707, Cl. 340-172.500.
- Bowker, David E.: *See—*
  - Charnock, Harry; and Bowker, David E., 3,703,424.
- Bowring, David John, to G.K.N. Sankey Limited. Coin-operated vending machines. 3,703,229, Cl. 194-10.000.
- Bozik, John E.; Swift, Harold E.; and Wu, Ching-Yong, to Goodrich-Gulf Chemicals Inc. Polymerization process and catalyst system therefor. 3,703,483, Cl. 260-2.00a.
- BP Chemicals Limited: *See—*
  - Yeomans, Bertram, 3,703,549.
- Braendstroem, Arne Elof; Carlsson, Stig Ake Ingemar; and Gagneux, Andre, to Geigy Chemical Corporation. 2-Aroyl-3-aminoalkoxy indoles. 3,703,524, Cl. 260-293.610.
- Bratt, Richard L., to Norton Company. Surface conforming wear resistant doctor blade for rolls. 3,703,019, Cl. 15-256.510.
- Bray, Horace A., to Dunlop Company Limited, The. Friction mechanisms containing silicon nitride. 3,703,224, Cl. 188-251.00m.
- Bray, Thomas L.: *See—*
  - Cofer, Daniel B.; and Bray, Thomas L., 3,703,261.
- Brda, Otto. Rescuing device. 3,703,218, Cl. 182-6.000.
- Breidenbach, Josef: *See—*
  - Holler, Hans; Breidenbach, Josef; and Milles, Aloys, 3,703,590.
- Breitkreuz, Lutz: *See—*
  - Dennewitz, Rolf Dieter; and Breitkreuz, Lutz, 3,703,662.
- Breneman, Edwin J., to Kollmorgen Corporation. Veiling reflection and illumination meter. 3,703,338, Cl. 356-222.000.
- Brennan, William R., to Chemed Corporation. Storage stable detergent composition. 3,703,470, Cl. 252-99.000.
- Brenner, Abner; and Anderson, Harvey J., to United States of America, Atomic Energy Commission. Vapor deposition of rhenium and rhenium-tungsten alloy coatings. 3,703,405, Cl. 117-107.200.
- Bretch, Edward E., to Borden, Inc. Snack food and method of producing same. 3,703,378, Cl. 99-81.000.
- Brewer, Lee M., to General Motors Corporation. Flow divider control valve assembly. 3,703,186, Cl. 137-101.000.
- Brewer, Robert W., to General Motors Corporation. Filler cap. 3,703,245, Cl. 220-40.00r.
- Brey, Christian: *See—*
  - Allemand, Robert; Brey, Christian; and Jacobe, Jean, 3,703,638.
- Brigham, Owsley H. Camera flash switch adapter. 3,703,131, Cl. 95-11.00l.
- British Leyland Motor Corporation Limited: *See—*
  - Weaving, John Harold, 3,703,164.
- British Oxygen Company Limited, The: *See—*
  - Doxey, Brian Cecil, 3,703,674.
- Bromer, Heinz; and Meinert, Norbert, to Lietz, Ernst, G.m.b.H. Optical glass having a high refracting index and a high color dispersion. 3,703,389, Cl. 106-47.00q.
- Brooks, Elwin W.: *See—*
  - Berger, Richard M.; and Brooks, Elwin W., 3,703,429.
- Broussaud, Georges; and Lowenthal, Serge, to Thomson-CSF. Signal spectral multiplexing system. 3,703,640, Cl. 250-199.000.
- Browall, Kenneth W.; and Interrante, Leonard V., to General Electric Company. Humidity sensor. 3,703,696, Cl. 338-35.000.
- Brown, James, Jr.: *See—*
  - Zakaria, Moneeb; Raphaelian, Leo A.; Taber, David; and Brown, James, Jr., 3,703,471.
- Brownstein, David W. Integrated in-line method of continuously casting metal. 3,703,204, Cl. 164-87.000.
- Bryant, Thurman E.: *See—*
  - Reece, Thomas L.; and Bryant, Thurman E., 3,703,465.
- Buckeye Steel Castings Company, The: *See—*
  - Furniss, Loree Elwyn, 3,703,239.
- Bucky, Peter A. Key heater flashlight. 3,703,634, Cl. 240-10.6ch.
- Bucolo, Iovanni; and David, Harold, to Calbiochem. Triglyceride hydrolysis and assay. 3,703,591, Cl. 195-103.50r.
- Budich, Wolfgang; Theissen, Hans; Schaefer, Hans; and Andree, Walter, to Dynamit Nobel Aktiengesellschaft. Profile member for windows, doors, facades, or the like. 3,703,063, Cl. 52-727.000.
- Buecheler, Paul; and Steiner, Karl Ulrich, to Sandoz Ltd. Dyeing synthetic polyamides with 1, 4-di-(hydroxyalkylamino) anthraquinones. 3,703,350, Cl. 8-39.000.
- Buglov, Evgeny Danilovich: *See—*
  - Dovgalev, Stepan Ilich; Ermolenko, Igor Nikolaevich; Buglov, Evgeny Danilovich; Danilov, Ivan Petrovich; and Longin, Mikail Lvovich, 3,703,438.
- Building Block Modules, Inc.: *See—*
  - Klett, George G.; and Akerstrom, Gary L., 3,703,058.
- Buisson, Gerard: *See—*
  - Lamanche, Jean; and Buisson, Gerard, 3,703,396.
- Bullock, John W., to Arrow-Hart, Inc. Contact operating mechanism for contact breaker. 3,703,694, Cl. 337-62.000.
- Bundschuh, John J.; Roman, Robert J.; and Thomson, Kenneth W., to Eastman Kodak Company. Cinematographic cartridge projector apparatus. 3,703,333, Cl. 352-157.000.
- Bunker-Ramo Corporation, The: *See—*
  - Alessio, Sergio A.; Chow, Weichien; and Kosem, Marion, 3,703,033.
- Bunnell, Charles Milton. Scallop muscle and viscera preconditioner. 3,703,022, Cl. 17-53.000.
- Bureau de Recherches Geologiques et Minieres: *See—*
  - Cohen-Alloro, Richard; Cuvillier, Roger; and Grassaud, Jean, 3,703,237.
- Burkarth, Jack L., to E-System, Inc. Zoom light. 3,703,635, Cl. 240-44.100.
- Burkhardt, Lawrence E.; and Johnson, Charles H., to United States of America, Navy. Selective arming mode and detonation option ordnance fuze. 3,703,145, Cl. 102-70.20r.
- Burnett, Marvin D. Automatic disconnect for a vehicular battery. 3,703,617, Cl. 200-61.500.
- Burroughs Corporation: *See—*
  - Bovett, Duane E., 3,703,707.
  - Shesser, Arthur B., 3,703,657.
- Busch, Walter; and Schwarzer, Franz, to Kalle Aktiengesellschaft. Process for the preparation of a semipermeable membrane from polymerized β-lactams unsubstituted at the nitrogen atom. 3,703,570, Cl. 264-41.000.
- Butzow, Neil W.; and Harris, Bernard. Method for making ball and socket type bearings in multiple. 3,703,421, Cl. 156-84.000.
- Bylund, Per-Ake; Farkas, Tibor; and Andersson, Nils Eric, to Allmanna Svenska Elektriska Aktiebolaget. Semiconductor device with semiconductor element arranged side by side and provided with hollow coaling bodies. 3,703,668, Cl. 317-23.0ar.
- Calbiochem: *See—*
  - Bucolo, Iovanni; and David, Harold, 3,703,591.
- Cammarata, Italo: *See—*
  - Vecchio, Martino; Carraro, Giorgi; and Cammarata, Italo, 3,703,557.
- Campbell, Edward E.; and Sandor, Bela, to General Motors Corporation. Closure latch. 3,703,308, Cl. 292-216.000.
- Campbell, Herman W.: *See—*
  - Barker, Graham; and Campbell, Herman W., 3,703,481.
- Canfield, William N.: *See—*
  - Vogel, John D.; and Canfield, William N., 3,703,288.
- Canon Kabushiki Kaisha: *See—*
  - Goshima, Takeshi; and Miyasaka, Tooru, 3,703,129.
  - Kohtani, Yutaka, 3,703,041.
- Carleton, Peter S.; and Farrissey, William J., Jr., to Upjohn Company, The. Adducts of ethylene carbonate and triethylenediamine. 3,703,520, Cl. 260-268.00t.
- Carlos, Donald Dante; and Shimp, David Alan, to Celanese Coatings Company. Oximes as accelerators for the amine curing of epoxy resins. 3,703,497, Cl. 260-47.5en.
- Carlsson, Stig Ake Ingemar: *See—*
  - Braendstroem, Arne Elof; Carlsson, Stig Ake Ingemar; and Gagneux, Andre, 3,703,524.
- Carraro, Giorgi: *See—*
  - Vecchio, Martino; Carraro, Giorgi; and Cammarata, Italo, 3,703,557.
- Carrier Corporation: *See—*
  - Czuszak, Charles C., 3,703,339.
  - Gutheim, August W., 3,703,140.
  - Macleod, David E., 3,703,087.
  - Worthen, Richard A., 3,703,183.
- Carroll, Patrick J.: *See—*
  - Spurlin, William V.; and Carroll, Patrick J., 3,703,236.
- Carson, William N., Jr.; and Manganaro, James L., to General Electric Company. Method of generating hydrogen with magnesium reactant. 3,703,358, Cl. 23-211.000.
- Cartelli, Joseph M. Lighted display box having means for encasing lamp structure. 3,703,720, Cl. 340-381.50r.

- Carter, Bob A., to Southern Cross Corporation. Portable flame ionization gas leak detector. 3,703,356, Cl. 23-254.0ef.
- Casadio, Silvano; and Pala, Gianfranco, to Istituto de Angeli S.p.A. 1,2-Diphenyl-3,5-dioxo-4-substituted pyrazolidines. 3,703,528, Cl. 260-310.00b.
- Casadio, Silvano; and Pala, Gianfranco, to Istituto de Angeli S.p.A. 19-Nortestosterone esters. 3,703,534, Cl. 260-397.400.
- Castellano, Joseph Anthony, to RCA Corporation. Liquid crystal color display. 3,703,329, Cl. 350-150.000.
- Castor, William M.: *See*—
  - Turley, Robert R.; Castor, William M.; and Nunnally, Kenneth R., 3,703,593.
- Caterpillar Tractor Company: *See*—
  - Wagner, Harold H., 3,703,663.
- Cavalla, John Frederick,; Simpson, Roy; and White, Alan Chapman, to Wyeth, John, & Brother Limited. Nitrogen-containing tricyclic compounds. 3,703,529, Cl. 260-326.50b.
- Celanese Coatings Company: *See*—
  - Carlos, Donald Dante; and Shimp, David Alan, 3,703,497.
  - McCartney, Roger L., 3,703,501.
- Celanese Corporation: *See*—
  - Di Pietro, Joseph, 3,703,392.
  - Levy, Leon B., 3,703,551.
- Cella, John A.; and Schmitt, William H., to Alberto-Culver Company. Tooth paste having improved tooth cleaning properties. 3,703,578, Cl. 424-49.000.
- Cellu Products Company: *See*—
  - Doll, Brendan L., 3,703,116.
- Ceraver: *See*—
  - Willem, Michel, 3,703,606.
- Champion International Corporation: *See*—
  - Hemming, Charles B.; and Bernholz, Edward L., 3,703,394.
  - Luebs, Donald F.; and Ashby, Frederick R., 3,703,198.
- Chana, Howard E., to General Motors Corporation. Accumulator for hydraulically operated friction clutch or brake unit. 3,703,228, Cl. 192-85.00r.
- Chapman, Howard D., to Clarin Corporation. Collapsible arm chair. 3,703,312, Cl. 297-35.000.
- Charnock, Harry; and Bowker, David E., to Dunlop Holdings Limited. Method of producing a wear-resistant area in a surface-covering material. 3,703,424, Cl. 156-272.000.
- Chartered Enterprises, mesne: *See*—
  - Leach, George J., 3,703,013.
- Chemed Corporation: *See*—
  - Brennan, William R., 3,703,470.
- Cherubim, Martin; Giehring, Horst; and Neier, Wilhelm, to Deutsche Texaco Aktiengesellschaft. Manufacture of basic nitrogen and hydroxyl containing epoxide resins. 3,703,531, Cl. 260-348.600.
- Chess, Samuel; and Cleveland, Bruce B., to Upjohn Company, The. Water-scavenging composition for hydraulic fluids. 3,703,468, Cl. 252-77.000.
- Chevron Research Company: *See*—
  - Ferm, Richard L., 3,703,464.
  - Vitter, Albert L., Jr.; and McDonald, Hugh G., 3,703,096.
- Chisso Corporation: *See*—
  - Inoi, Takeshi; Sueyoshi, Koji; Fujii, Masahiro; Shoji, Kenjiro; Shudo, Akio; Yoshizaki, Takayoshi; and Yutaka, Matsuo, 3,703,518.
- Choby, Edward G., Jr.: *See*—
  - Esler, Donald F.; and Choby, Edward G., Jr., 3,703,419.
- Choisser, John P. Apparatus for photocathode processing. 3,703,155, Cl. 118-48.000.
- Chow, Weichien: *See*—
  - Alessio, Sergio A.; Chow, Weichien; and Kosem, Marion, 3,703,033.
- Ciba-Geigy AG: *See*—
  - Dobinson, Bryan; Hope, Paul; Winterbottom, Kenneth; and Shaw, Trevor, 3,703,352.
  - Grelat, Maurice, 3,703,533.
- Ciba-Geigy Corporation: *See*—
  - Heusler, Karl; and Woodward, Robert Burns, 3,703,512.
  - Rothweiler, Werner B., 3,703,597.
- Ciepley, Ted, to Bliss & Laughlin Industries, Incorporated. Limited pivotal handle assembly for furniture components. 3,703,683, Cl. 16-126.000.
- Cilag-Chemie, A.G.: *See*—
  - Richter, Carl; Pluss, Kurt; and Feth, Georg, 3,703,537.
- Cincinnati Milacron-Heald Corporation: *See*—
  - Uhtenwoldt, Herbert R., 3,703,054.
- Circuit-Stik, Inc.: *See*—
  - Levesoue, Norman R.; and Harper, Donald E., 3,703,603.
- Cities Service Company: *See*—
  - Green, Joseph; Roth, Shirley H.; and Seipel, John J., 3,703,487.
  - Levine, Ralph, 3,703,558.
  - Roth, Shirley H., 3,703,409.
  - Roth, Shirley H., 3,703,410.
- Clarin Corporation: *See*—
  - Chapman, Howard D., 3,703,312.
- Clark, Donald E.: *See*—
  - Alburn, Harvey E.; Clark, Donald E.; Grant, Norman H.; and Lapidus, Milton, 3,703,542.
  - Alburn, Harvey E.; Clark, Donald E.; Grant, Norman H.; and Lapidus, Milton, 3,703,543.
- Clauss, Richard J.; Tremmel, Robert; and Becking, Donald H., to Oxy Metal Finishing Corporation, mesne. Method of making composite nickel electroplate and electrolytes therefor. 3,703,448, Cl. 204-40.000.
- Clement, John C., to Ocean Design Engineering Corporation. Biased taut line mooring system. 3,703,151, Cl. 114-230.000.
- Cleveland, Bruce B.: *See*—
  - Chess, Samuel; and Cleveland, Bruce B., 3,703,468.
- Clishem, Thomas A.; Duerr, Francia r.; and Olympia, Frederick D., to Corhart Refractories Company. Electric melting furnace and process of using it. 3,703,391, Cl. 106-57.000.
- Coal Industry (Patents) Limited: *See*—
  - Trolley, John Henry, 3,703,315.
- Coaxial Scientific Corporation: *See*—
  - Mc Voy, David S., 3,703,684.
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  - Wickman, Miles X.; and Cohn, Harold P., 3,703,682.
- Colburn, William H., Jr., to Space Ordnance Systems, Inc., mesne. Delay composition and device. 3,703,144, Cl. 102-24.000.
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- Colgate-Palmolive Company: *See*—
  - Grand, Paul Sheldon; and Wixon, Harold Eugene, 3,703,480.
- Collins Radio Company: *See*—
  - Heidt, Marvin W., 3,703,679.
- Colorado Technologists Incorporated: *See*—
  - White, Michael W., Jr.; and Plamondon, Jacques A., 3,703,166.
- Combustion Unlimited, Incorporated: *See*—
  - Straitz, John F., III, 3,703,349.
- Commissariat a l'Energie Atomique: *See*—
  - Allemand, Robert; Brey, Christian; and Jacobe, Jean, 3,703,638.
  - Goff, Denis Le, 3,703,661.
- Compagnie de Saint-Gobain: *See*—
  - Lamanche, Jean; and Buisson, Gerard, 3,703,396.
- Compagnie Generale d'Electricite: *See*—
  - Jacquelin, Jean, 3,703,416.
- Compur-Werk Gesellschaft mit beschrankter Haftung & Co.: *See*—
  - Schwarz, Gerhard, 3,703,136.
- Conley and Kleppen Enterprises, Inc.: *See*—
  - Kleppen, Arthur L., Jr., 3,703,622.
- Construction Products Corporation: *See*—
  - Jones, David P., 3,703,219.
- Continental Oil Company: *See*—
  - Kerfoot, Oliver C.; and Duchmann, George W., 3,703,559.
  - Sias, Roy C., 3,703,475.
- Cook Electric Company: *See*—
  - Yereance, Robert A.; and Erlenbach, Harold W., Jr., 3,703,665.
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- Corhart Refractories Company: *See*—
  - Clishem, Thomas A.; Duerr, Francis r.; and Olympia, Frederick D., 3,703,391.
- Corning Glass Works: *See*—
  - Araujo, Roger J.; Sawchuk, Loris G.; and Seward, Thomas P., III, 3,703,388.
  - Fyler, Norman F., 3,703,660.
  - Kunz, Hans J., 3,703,670.
  - Melezoglu, Cevdet, 3,703,411.
  - Stephenson, Donald A., 3,703,726.
- Council on Library Resources, Inc., mesne: *See*—
  - Kusterer, James E., Jr.; and Hind, John D., 3,703,353.
- Cowles, John O.: *See*—
  - Heckman, Richard A.; and Cowles, John O., 3,703,208.
- Cowpland, Michael C. J., to Microsystems International Limited. Voltage clipping circuit. 3,703,647, Cl. 307-237.000.
- Cree, George Benson, Jr. Brake press die system, structure and processes. 3,703,094, Cl. 72-389.000.
- Creusot-Loire: *See*—
  - Babel, Louis, 3,703,601.
- Cripe, Maxwell L., to Bendix Corporation, The. Vacuum pumping device. 3,703,077, Cl. 60-51.000.
- Cronin, John C., to I-T-E Imperial Corporation. Fault current limiter using superconductive element. 3,703,664, Cl. 317-20.000.
- Cubb-Pac Corporation: *See*—
  - Lugiewicz, Robert C., 3,703,064.
- Cullom, John T. Process for producing copper and elemental sulfur. 3,703,366, Cl. 75-74.000.
- Cummisford, Patricia D.; and Beck, Charles I., to General Mills, Inc. Double expanded food products. 3,703,379, Cl. 99-81.000.

- Curtis, Rolando T., to Integrated Ceilings, Inc. Connector structure for suspended ceilings and the like. 3,703,307, Cl. 287-189.36r.
- Cuvillier, Roger: *See*—
  - Cohen-Alloro, Richard; Cuvillier, Roger; and Grassaud, Jean, 3,703,237.
- Cyr, Gilman N.: *See*—
  - Riffkin, Charles; Rifino, Carl B.; and Cyr, Gilman N., 3,703,511.
- Czuszak, Charles C., to Carrier Corporation. Turbine speed control system. 3,703,339, Cl. 415-36.000.
- Dahlstrom, Karl L.: *See*—
  - Davis, Robert W.; and Dahlstrom, Karl L., 3,703,311.
- Dahms, Wilbraham-Ronald: *See*—
  - Anderson, George J.; and Dahms, Wilbraham-Ronald, 3,703,494.
- Daicel Ltd.: *See*—
  - Takasu, Itaru; Sasaki, Takaaki; and Yamamoto, Akira, 3,703,541.
- Daimler-Benz Aktiengesellschaft: *See*—
  - Lamm, Heinz, 3,703,163.
  - Schiesterl, Gerhard; and Wulf, Helmut, 3,703,313.
  - Schiesterl, Gerhard; and Eibl, Josef, 3,703,704.
- Daley, Thomas Joseph: *See*—
  - Ackermann, Walter Thomas; and Daley, Thomas Joseph, 3,703,148.
- Danilov, Ivan Petrovich: *See*—
  - Dovgalev, Stepan Ilich; Ermolenko, Igor Nikolaevich; Buglov, Evgeny Danilovich; Danilov, Ivan Petrovich; and Longin, Mikail Lvovich, 3,703,438.
- Data Recognition Corporation: *See*—
  - Shanrock, Raymond L., 3,703,626.
- David, Harold: *See*—
  - Bucolo, Iovanni; and David, Harold, 3,703,591.
- Davies, Robert William, to Molins Limited. Mechanism for producing rectilinear motion. 3,703,103, Cl. 74-86.000.
- Davis, David E., to Midwest Steel Fabricators, Inc. Aggregate dryer for asphalt plant. 3,703,274, Cl. 263-30.000.
- Davis, David S.; and Kim, Young K., to Witco Chemical Corporation. Halogenation of hydroxyaryl sulfones. 3,703,556, Cl. 260-607.00a.
- Davis, Robert W.: *See*—
  - Davis, Robert W.; and Dahlstrom, Karl L. (said Dahlstrom assor. to said), 3,703,311.
- Davis, Robert W.; and Dahlstrom, Karl L., said Dahlstrom assor. to said Davis, Robert W. Tent camping trailer. 3,703,311, Cl. 296-23.00r.
- De Rees, Delbert D.; and Walker, Gerald R., to General Motors Corporation. Vehicle window installation. 3,703,053, Cl. 49-428.000.
- De Sipio, Richard G.: *See*—
  - Beyer, Henry R.; Long, Thomas F.; and De Sipio, Richard G., 3,703,719.
- De Vries, Robert C.; and Fleischer, James F., to General Electric Company. Thermistors. 3,703,478, Cl. 252-521.000.
- Deal, Samuel Broughton; and Bartch, Donald Walter, to RCA Corporation. Method for preparing the viewing-screen structure of a cathode-ray tube. 3,703,401, Cl. 117-33.5cp.
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- Deep Oil Technology, Inc.: *See*—
  - Horton, Edward E., 3,703,207.
- Deering Milliken Research Corporation: *See*—
  - Klein, Norman E., 3,703,154.
  - Lock, Michael V., 3,703,351.
- Del Mar Engineering Laboratories: *See*—
  - Hesen, Joseph A., 3,703,284.
- Delmonte, John; Meadows, Paul L.; and Benavides, Augusto E., to Furane Plastics Incorporated. Method of making transparent laminated structure having transplant interlayer. 3,703,425, Cl. 156-245.000.
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- Demler, Henry William, Sr., to AMP Incorporated. Drain assembly for drain pipe. 3,703,302, Cl. 285-161.000.
- Denisov, Nikolai Timofeevich; Efimov, Oleg Nikolaevich; Shuvalov, Viktor Fedorovich; Shuvalova, Natalia Ivanovna; Shilova, Alla Konstantinovna; and Shilov, Alexandr Evgenievich, to Filial Ordena Lenina Institut Khimicheskoi Fiziki ANSSR. Method of producin hydrazine. 3,703,354, Cl. 23-190.00r.
- Denki Kagaku Kogyo Kabushiki Kaisha: *See*—
  - Kadowaki, Takashi; and Itoyama, Kenji, 3,703,568.
  - Masuda, Shiro; Ohkubo, Takashi; and Furukawa, Yu, 3,703,492.
- Denki Onkyo Co., Ltd.: *See*—
  - Mogi, Toshio, 3,703,695.
- Dennewitz, Rolf Dieter; and Breitkreuz, Lutz, to Loewe Opta G.m.b.H. High speed quenching arrangement for a flash device. 3,703,662, Cl. 315-159.000.
- Derouin, David J.: *See*—
  - Tracy, Robert D.; and Derouin, David J., 3,703,653.
- DeSoto, Inc.: *See*—
  - Sekmakas, Kazys, 3,703,455.
- Deutsche Texaco Aktiengesellschaft: *See*—
  - Cherubim, Martin; Giehring, Horst; and Neier, Wilhelm, 3,703,531.
- Di Liddo, Bart A., to Goodrich, B. F. , Company, The. Preparation of esters of unsaturated mono-carboxylic acids. 3,703,539, Cl. 260-486.00r.
- Di Pietro, Joseph, to Celanese Corporation. Shaped articles of improved dyeability. 3,703,392, Cl. 106-177.000.
- Diamond Shamrock Corporation: *See*—
  - Lasco, Ralph H., 3,703,473.
  - Lipowski, Stanley A.; and Queen, John C., Jr., 3,703,563.
- Dick, A. B., Company: *See*—
  - Niesen, George P.; and Marum, Edward C., 3,703,156.
- Dietz, Charles L.: *See*—
  - Albanese, Victor J.; Johnson, Arthur E.; and Dietz, Charles L., 3,703,723.
- Dietz, Raymond Louis, to Owens-Illinois, Inc. Non-flow solder-stop glasses comprising lead-zinc borate and ceramic. 3,703,386, Cl. 106-39.00r.
- Dingwall, Andrew Gordon Francis, to RCA Corporation. Shaped riser on substiate step for promoting metal film continuity. 3,703,667, Cl. 317-234.00r.
- Dixon, Ted A. Nebulizer and tent assembly. 3,703,173, Cl. 128-194.000.
- Doane, John Charles: *See*—
  - Lusti, John; and Doane, John Charles, 3,703,222.
- Dobinson, Bryan; Hope, Paul; Winterbottom, Kenneth; and Shaw, Trevor, to Ciba-Geigy AG and I.W.S. Nominee Company Limited. Treatment of keratinous fibres and fabrics. 3,703,352, Cl. 8-128.00a.
- Doerfel, Helmut: *See*—
  - Falkenstein, Georg; Peine, Hans Georg; Doerfel, Helmut; Raff, Paul; and Schuster, Ludwig, 3,703,595.
- Doll, Brendan L., to Cellu Products Company. Method and apparatus for slitting sheet material. 3,703,116, Cl. 83-17.000.
- Dover Corporation, mesne: *See*—
  - Reece, Thomas L.; and Bryant, Thurman E., 3,703,465.
- Dovgalev, Stepan Ilich; Ermolenko, Igor Nikolaevich; Buglov, Evgeny Danilovich; Danilov, Ivan Petrovich; and Longin, Mikail Lvovich, to Belorussky Institut Perelivania Krovi. Method for the stabilization of blood. 3,703,438, Cl. 195-1.800.
- Dow Chemical Company, The: *See*—
  - Gum, Wilson F., Jr.; and Goralski, Christian T., 3,703,515.
  - Hoblit, Louis D.; and Strange, Carl P., 3,703,565.
  - Jones, Giffin D.; and Tefertiller, Nancy B., 3,703,553.
  - Levine, Charles A., 3,703,412.
  - McCrary, Avis L., 3,703,545.
  - Staudacher, Gerald R.; and Ames Sidney W., 3,703,192.
  - Stevenson, Graham T., 3,703,581.
  - Surls, Joseph P.; Bauer; David L.; and West, Ben F., 3,703,357.
  - Turley, Robert R.; Castor, William M.; and Nunnally, Kenneth R., 3,703,593.
- Dow Corning Corporation: *See* -
  - Antonen, Robert C.; Kookootsedes, Gust J.; and Field, Arthur J., 3,703,562.
  - Keil, Joseph W., 3,703,486.
- Doxey, Brian Cecil, to British Oxygen Company Limited, The. Line following. 3,703,674, Cl. 318-577.000.
- Drexler, Rodger A.; and Altmann, Conrad, to Eastman Kodak Company. Method for development of electrostatic images. 3,703,395, Cl. 117-17.500.
- du Pont, Michael H.: *See*—
  - Lang, Paul Wentworth, 3,703,135.
- Duben, Franklin T., to Honeywell Information Systems Inc. Memory cell with voltage limiting at transistor control terminals. 3,703,711, Cl. 340-173.0ff.
- Duchmann, George W.: *See*—
  - Kerfoot, Oliver C.; and Duchmann, George W., 3,703,559.
- Duck, Edward William; Locke, John Michael; and Amass, Allan John, to International Synthetic Rubber Company, The. Graft copolymerisation provess. 3,703,566, Cl. 260-878.00r.
- Duerr, Francis r.: *See*—
  - Clishem, Thomas A.; Duerr, Francis r.; and Olympia, Frederick D., 3,703,391.
- Dugan, Allan Edward, to Western Electric Company, Incorporated. Electron beam inspection. 3,703,637, Cl. 250-49.5pe.
- Dunlop Company Limited, The: *See*—
  - Bray, Horace A., 3,703,224.
- Dunlop Holdings Limited: *See*—
  - Charnock, Harry; and Bowker, David E., 3,703,424.
- Dustin, Daniel S., to Minnesota Mining and Manufacturing Company. Presensitized light-sensitive letterpress printing makeready. 3,703,362, Cl. 96-38.200.
- Dynamics Research Corporation: *See*—
  - Bakewell, Joseph J., 3,703,450.
- Dynamit Nobel Aktiengesellschaft: *See*—
  - Budich, Wolfgang; Theissen, Hans; Schaefer, Hans; and Andree, Walter, 3,703,063.
  - Gawlick, Heinz; Bendler, Hellmut; and Hubsch, Gunter, 3,703,121.
- E-System, Inc.: *See*—
  - Burkarth, Jack L., 3,703,635.
- E-System, Inc., mesne: *See*—
  - Gershberg, David N.; and Lee, Alex Y., 3,703,722.
  - Usry, Joe D., 3,703,185.
- E-Systems, Inc.: *See*—
  - Gluth, Norman P., 3,703,609.
- Earley, James Valentine; Fryer, Rodney Ian; and Sternbach, Leo Henryk. 1-Carboxyalkyl or 1-carboxyalkenyl-1, 4-benzodiazepin-2-ones. 3,703,510, Cl. 260-239.30d.
- Eastman Kodak Company: *See*—
  - Agnone, John L.; Fister, Robert V.; and Sheppard, Jon C., 3,703,585.

  - Alsup, Michael John; and Guevara, Alfredo Ruben, 3,703,373.
  - Beach, David E., 3,703,132.
  - Bundschuh, John J.; Roman, Robert J.; and Thomson, Kenneth W., 3,703,333.
  - Drexler, Rodger A.; and Altmann, Conrad, 3,703,395.
  - Groet, Nicholas H.; and Salminen, Wilho M., 3,703,375.
  - Harvey, Donald M., 3,703,134.
  - Hester, Robert; and Pierson, Howard P., 3,703,347.
  - Jackson, Winston J., Jr., 3,703,495.
  - Lareau, Norman N., 3,703,272.
  - Merrill, Stewart H., 3,703,371.
  - Merrill, Stewart H., 3,703,372.
  - Motter, Robert Franklin, 3,703,584.
  - Poling, Ezar C.; and Botsford, Charles E., 3,703,428.
- Ebbe, Grace Lakin; and Marki, Gustav Paul, to Bell Telephone Laboratories, Incorporated. Party-line bridge-lifter. 3,703,610, Cl. 179-35.000.
- Edwards Enterprises: *See—*
  - Edwards, Paul R., 3,703,050.
- Edwards, Paul R., to Edwards Enterprises. Pallet spool assembly. 3,703,050, Cl. 47-34.110.
- Edwards, Ralph W.; and Petry, Ronald G., to General Motors Corporation. Alternating squirt windshield washer. 3,703,017, Cl. 15-250.020.
- Efimov, Oleg Nikolaevich: *See—*
  - Denisov, Nikolai Timofeevich; Efimov, Oleg Nikolaevich; Shuvalov, Viktor Fedorovich; Shuvalova, Natalia Ivanovna; Shilova, Alla Konstantinovna; and Shilov, Alexandr Evgenievich, 3,703,354.
- Eibl, Josef: *See—*
  - Schiesterl, Gerhard; and Eibl, Josef, 3,703,704.
- Eichinger, Hans: *See—*
  - Strehler, Richard; Eichinger, Hans; and Hubl, Julius, 3,703,226.
- Eidelberg, Jonah, to Electrical Fittings Corporation. Slip-fit electrical coupling. 3,703,303, Cl. 285-382.700.
- Eilhardt, Bernd; and Pelz, Diethart, to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Method of making waterproof electrical cable. 3,703,034, Cl. 29-624.000.
- Ekstrom, Staffan Walter, to AGA Aktiebolag. Valve device. 3,703,191, Cl. 137-494.000.
- Electrical Fittings Corporation: *See—*
  - Eidelberg, Jonah, 3,703,303.
- Elliott, Harold V., to General Motors Corporation. Engine starter and power transmission interlock system. 3,703,092, Cl. 70-248.000.
- Ellis, John D., Jr.: *See—*
  - Saccomano, Joseph M.; and Ellis, John D., Jr., 3,703,279.
- English Sewing Limited: *See—*
  - Bose, Otindra Nath, 3,703,075.
- Envirotech Corporation: *See—*
  - Takahashi, Yoshihiro; Moore, Robert T.; and Stephens, Thomas M., 3,703,355.
- Erlenbach, Harold W., Jr.: *See—*
  - Yereance, Robert A.; and Erlenbach, Harold W., Jr., 3,703,665.
- Ermolenko, Igor Nikolaevich: *See—*
  - Dovgalev, Stepan Ilich; Ermolenko, Igor Nikolaevich; Buglov, Evgeny Danilovich; Danilov, Ivan Petrovich; and Longin, Mikail Lvovich, 3,703,438.
- Ernest, Eric: *See—*
  - Heyden, Vander; and Ernest, Eric, 3,703,627.
- Erwin, Rudy, to Teledyne Industries, Inc. Method for making castable carbonitride alloys. 3,703,368, Cl. 75-175.500.
- Esler, Donald F.; and Choby, Edward G., Jr., to Allegheny Ludlum Industries, Inc. Surface finishing. 3,703,419, Cl. 148-6.160.
- Esso Research and Engineering Company: *See—*
  - Konecky, Milton S., 3,703,361.
  - Longwell, John P., 3,703,080.
  - Samler, Lee F.; and Boone, John J., 3,703,197.
- Ethicon, Inc.: *See—*
  - Beroff, Howard; and Richmond, Ernest L., 3,703,452.
- Ethyl Corporation: *See—*
  - Perilstein, Warren L., 3,703,360.
- Etudes et Fabrications Aeronautiques: *See—*
  - Pravaz, Marcel, 3,703,268.
- Evans, Archibald D. Solar still. 3,703,443, Cl. 202-190.000.
- Evans Products Company: *See—*
  - Spaeth, Irvin J., 3,703,225.
- Evrard, Jean-Claude: *See—*
  - Gohe, Raymond; Randoing, Jean Martial; Gohe, Max; and Evrard, Jean-Claude, 3,703,631.
- Eylure Limited: *See—*
  - Aylott, Eric Victor, 3,703,180.
- Falkenstein, Georg; Peine, Hans Georg; Doerfel, Helmut; Raff, Paul; and Schuster, Ludwig, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Glass-clear polyamides. 3,703,595, Cl. 260-78.00r.
- Farbenfabriken Bayer Aktiengesellschaft: *See—*
  - Muller, Erwin, 3,703,540.
  - Nast, Roland; Kuhle, Engelbert; and Abele, Manfred, 3,703,500.
  - Sutter, Hubert; and Beck, Manfred, 3,703,567.
- Farkas, Tibor: *See—*
  - Bylund, Per-Ake; Farkas, Tibor; and Andersson, Nils Eric, 3,703,668.
- Farr, John Peter George; and Rowe, Geoffrey Whaley, to American Metal Climax Inc. Formation of lubricant coating by electrolysis. 3,703,449, Cl. 204-56.00r.
- Farrington, Dale A.; and Vandevord, George E., to General Electric Company. Muzzle brake torque assist for multi-barrel weapons. 3,703,122, Cl. 89-14.00c.
- Farrissey, William J., Jr.: *See—*
  - Carleton, Peter S.; and Farrissey, William J., Jr., 3,703,520.
- Farrow, Victor, to Thorn Electronics Limited. Fluorescent lamp inverter circuit. 3,703,677, Cl. 321-45.00r.
- Fateichev, Anatoly Semenovich: *See—*
  - Povolotsky, Aron Markovich; Sushkin, Vyacheslav Petrovich; Fateichev, Anatoly Semenovich; and Gavrilov, Nikolai Vasilievich, 3,703,025.
- Feichtinger, Johan: *See—*
  - Krausz, Johann; and Feichtinger, Johan, 3,703,057.
- Feisel, Armin, to Fischer, Georg, Aktiengesellschaft. Quick-change device for clamping apparatus on turning machines. 3,703,113, Cl. 82-30.000.
- Feldman, Martin: *See—*
  - Anderson, Lawrence K.; Feldman, Martin; and Pinnow, Douglas Arthur, 3,703,137.
- Ferm, Richard L., to Chevron Research Company. Treatment of oil spills. 3,703,464, Cl. 210-40.000.
- Feth, Georg: *See—*
  - Richter, Carl; Pluss, Kurt; and Feth, Georg, 3,703,537.
- Field, Arthur J.: *See—*
  - Antonen, Robert C.; Kookootsedes, Gust J.; and Field, Arthur J., 3,703,562.
- Field, Leroy J.: *See—*
  - Lummus, James L.; and Field, Leroy J., 3,703,467.
- Fikse, Tyman H.: *See—*
  - Kamb, Roy A.; and Fikse, Tyman H., 3,703,271.
- Filial Ordena Lenina Institut Khimicheskoi Fiziki ANSSR: *See—*
  - Denisov, Nikolai Timofeevich; Efimov, Oleg Nikolaevich; Shuvalov, Viktor Fedorovich; Shuvalova, Natalia Ivanovna; Shilova, Alla Konstantinovna; and Shilov, Alexandr Evgenievich, 3,703,354.
- Fischer, Georg, Aktiengesellschaft: *See—*
  - Feisel, Armin, 3,703,113.
- Fischer, Nicolas, to Rhone-Progil. Process for producing vinyl resin foams. 3,703,485, Cl. 260-2.50p.
- Fister, Robert V.: *See—*
  - Agnone, John L.; Fister, Robert V.; and Sheppard, Jon C., 3,703,585.
- Fitch, Robert E. Golf swing training apparatus. 3,703,294, Cl. 273-191.00r.
- Flanagan, James Loton, to Bell Telephone Laboratories, Incorporated. Digital adaptive-to-linear delta modulated signal converter. 3,703,688, Cl. 332-1.000.
- Fleischer, James F.: *See—*
  - De Vries, Robert C.; and Fleischer, James F., 3,703,478.
- Flickinger, Erich: *See—*
  - Graefje, Heinz; and Flickinger, Erich, 3,703,444.
- Florent, Jean; Lunel, Jean; and Renaut, Jacques, to Rhone-Poulenc S.A. Process for the preparation of L-beta-(3, 4-dihydroxyphenyl)-alpha-alanine by fermentation. 3,703,439, Cl. 195-29.000.
- Flory, Klaus: *See—*
  - Stein, Werner; and Flory, Klaus, 3,703,469.
- FMC Corporation: *See—*
  - Spurlin, William V.; and Carroll, Patrick J., 3,703,236.
- Fodrea, James W., to General Motors Corporation. Method of manufacturing and assembling transmission components. 3,703,031, Cl. 29-469.000.
- Ford, Joseph R., to Wilson, Lee, Engineering Company, Inc. Corrugated inner cover structure. 3,703,276, Cl. 263-49.000.
- Formac International, Inc., mesne: *See—*
  - Schoonover, Richard H. A., 3,703,321.
- Forsheda Gummifabrik AB: *See—*
  - Malmstrom, Sven Erik, 3,703,296.
- Fortescue, Peter; and Shanstrom, Raymond T., to Gulf Oil Corporation, mesne. Means for supporting fissile material in a nuclear reactor. 3,703,437, Cl. 176-87.000.
- Foster, James Harold, to GTE Automatic Electric Laboratories Incorporated. Memory expansion arrangement in a central processor. 3,703,708, Cl. 340-172.500.
- Frank, Kjell, to Allmanna Svenska Elektriska Aktiebolaget. Inverter. 3,703,676, Cl. 321-5.000.
- Frank, Kjell; and Johansson, Lennart, to Allmanna Svenska Elektriska Aktiebolaget. Capacitor bank for AC networks. 3,703,680, Cl. 323-101.000.
- Fransson, Johnny, to Aktiebolaget Vibro-Verken. Vibrating roller. 3,703,128, Cl. 94-50.00v.
- Frantz Manufacturing Company: *See—*
  - Holland, John P.; and Aykens, Hein, 3,703,061.
- Freyn, Fritz: *See—*
  - Schreiber, Erich; Freyn, Fritz; and Noraberg, John, 3,703,178.
- Frink, Richard D. Fetal heart monitor with particular signal conditioning means. 3,703,168, Cl. 128-2.06r.
- Fryer, Rodney Ian: *See—*
  - Earley, James Valentine; Fryer, Rodney Ian; and Sternbach, Leo Henryk, 3,703,510.
- Fuji Heavy Industries, Ltd.: *See—*
  - Takahashi, Mitsuo, 3,703,215.
- Fuji Photo Film Co., Ltd.: *See—*
  - Kitajima, Masao; Tsuneoka, Yoozi; and Kondo, Asaji, 3,703,576.
  - Ono, Hisatake; and Osada, Chiaki, 3,703,398.

  - Tamai, Yasuo; Sato, Masamichi; Matsumoto, Seiji; and Honjo, Satoru, 3,703,400.
- Fujii, Masahiro: *See—*
  - Inoi, Takeshi; Sueyoshi, Koji; Fujii, Masahiro; Shoji, Kenjiro; Shudo, Akio; Yoshizaki, Takayoshi; and Yutaka, Matsuo, 3,703,518.
- Fujimori, Noboru: *See—*
  - Sakazume, Kaiichiro; Sakamoto, Eiichi; Itoh, Shigemasa; Fujimori, Noboru; and Baba, Shigeji, 3,703,377.
- Fujinami, Akira: *See—*
  - Sato, Katsumi; Nakamura, Takashi; Nakamura, Masaru; Hirasawa, Kazuo; Hamada, Mitsuo; Takahashi, Kenzi; Yashima, Masaaki; Ozaki, Toshiaki; Yamamoto, Sigeo; Ooishi, Tadashi; Fujinami, Akira; Horiuchi, Fukashi; and Nodera, Katsuji, 3,703,526.
- Fukumiya, Yukio: *See—*
  - Kiyomiya, Hiromoto; Fukumiya, Yukio; Aoki, Mithuzi; and Mama, Hiromichi, 3,703,611.
- Furane Plastics Incorporated: *See—*
  - Delmonte, John; Meadows, Paul L.; and Benavides, Augusto E., 3,703,425.
- Furlong, Owen Desmond, to Westland Aircraft Limited. Pressure control systems. 3,703,139, Cl. 98-1.500.
- Furniss, Loree Elwyn, to Buckeye Steel Castings Company, The. Center brace filter and center plate assembly. 3,703,239, Cl. 213-57.000.
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  - Masuda, Shiro; Ohkubo, Takashi; and Furukawa, Yu, 3,703,492.
- Fyler, Norman F., to Corning Glass Works. Photochromic fiber optic image storage device. 3,703,660, Cl. 313-92.0lf.
- Gagneux, Andre: *See—*
  - Braendstroem, Arne Elof; Carlsson, Stig Ake Ingemar; and Gagneux, Andre, 3,703,524.
- Galginaitis, Simeon V.: *See—*
  - Barnett, Allen M.; Galginaitis, Simeon V.; and Heumann, Frederick K., 3,703,656.
- Gallas, John D.; and Hofmeister, Richard J., to Motorola, Inc. Quick-release connector assembly for multiple member television cabinet. 3,703,323, Cl. 312-7.0tv.
- Garofalo, Dominic. Propeller spinner for model airplanes. 3,703,341, Cl. 416-245.000.
- Gavrilov, Nikolai Vasilievich: *See—*
  - Povolotsky, Aron Markovich; Sushkin, Vyacheslav Petrovich; Fateichev, Anatoly Semenovich; and Gavrilov, Nikolai Vasilievich, 3,703,025.
- Gawlick, Heinz; Bendler, Hellmut; and Hubsch, Gunter, to Dynamit Nobel Aktiengesellschaft. Control element to be ignited electrically for pin entrance. 3,703,121, Cl. 89-1.00b.
- Gaynor, Joseph, to Bell & Howell Company. Thermal transfer sheet and method of thermally transferring images. 3,703,143, Cl. 101-470.000.
- Gea Luftkuhlergesellschaft Happel GmbH & Co. KG: *See—*
  - Kassat, Harry; Kissel, Ernst; and Kolenda, Herbert, 3,703,592.
- Gebruder Holler GmbH: *See—*
  - Holler, Hans; Breidenbach, Josef; and Milles, Aloys, 3,703,590.
- Geigy Chemical Corporation: *See—*
  - Braendstroem, Arne Elof; Carlsson, Stig Ake Ingemar; and Gagneux, Andre, 3,703,524.
- Geisthoff, Hubert; Welschof, Hans-Heinrich; and Grosse-Entrup, Hubert, to Walterscheid, Jean, K.G., Firma. Detachable coupling device for torque transmitting shafts. 3,703,089, Cl. 64-32.00r.
- Gelder, Franz. Arrangement for planning and monitoring a production process. 3,703,630, Cl. 235-151.300.
- General Electric Company: *See—*
  - Barnett, Allen M.; Galginaitis, Simeon V.; and Heumann, Frederick K., 3,703,656.
  - Browall, Kenneth W.; and Interrante, Leonard V., 3,703,696.
  - Carson, William N., Jr.; and Manganaro, James L., 3,703,358.
  - Cole, Herbert S., Jr., 3,703,402.
  - Cordes, Linus F., 3,703,456.
  - De Vries, Robert C.; and Fleischer, James F., 3,703,478.
  - Farrington, Dale A.; and Vandevord, George E., 3,703,122.
  - Girard, Roland T.; and Rice, George A., 3,703,390.
  - Krebs, James N.; and Paulson, Elmir E., 3,703,081.
  - Mitofe, Stephan P.; and Will, Fritz G., 3,703,415.
  - Niedrach, Leonard W.; and Stoddard, William H., Jr., 3,703,457.
  - Ryckman, William D., Jr., 3,703,170.
  - Seybolt, Alan U., 3,703,369.
  - Sturgess, Geoffrey John; Hoffman, Jacob Sherman; Vdoviak, John William; and Hirschkron, Robert, 3,703,259.
  - White, Dwain M., 3,703,564.
- General Mills, Inc.: *See—*
  - Cummisford, Patricia D.; and Beck, Charles I., 3,703,379.
- General Motors Corporation: *See—*
  - Abel, William E., 3,703,613.
  - Brewer, Lee M., 3,703,186.
  - Brewer, Robert W., 3,703,245.
  - Campbell, Edward E.; and Sandor, Bela, 3,703,308.
  - Chana, Howard E., 3,703,228.
  - De Rees, Delbert D.; and Walker, Gerald R., 3,703,053.
  - Edwards, Ralph W.; and Petry, Ronald G., 3,703,017.
  - Elliott, Harold V., 3,703,092.
  - Fodrea, James W., 3,703,031.
  - Gillund, Arden G.; Holtshouse, Dan K.; Moretti, John A.; and Orlando, Vincent A., 3,703,300.
  - Hansen, Kai H., 3,703,165.
  - Kesten, Patrick N.; Webb, Richard A.; and Bedford, Raymond E., 3,703,387.
  - Lystad, Leonard A., 3,703,310.
  - Milton, Thomas J.; and Skelley, John W., 3,703,105.
  - Prachar, Otakar P., 3,703,102.
- General Motors Corporatirn: *See—*
  - Arntson, Gary L.; and Rasmussen, Tom, 3,703,106.
- George, Barbara. Pre-made buttonhole finish, a new type of bound buttonhole. 3,703,149, Cl. 112-264.000.
- Gershberg, David N.; and Lee, Alex Y., to E-System, Inc., mesne. Motion detection system with split-ring monostatic doppler detection. 3,703,722, Cl. 343-5.0pd.
- Geyler, Arthur H., to Gray, G. A., Company, The. Turret indexing assembly. 3,703,027, Cl. 29-39.000.
- Giehring, Horst: *See—*
  - Cherubim, Martin; Giehring, Horst; and Neier, Wilhelm, 3,703,531.
- Giesemann, Herbert. Apparatus for continuous mixing of two liquid agents to obtain a foamed synthetic product. 3,703,345, Cl. 425-4.000.
- Gignac, Robert J., to Thunderline Corporation. Articulated link seals. 3,703,297, Cl. 277-166.000.
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- Giordano, Louis. Resilient connector. 3,703,194, Cl. 138-109.000.
- Girard, Roland T.; and Rice, George A., to General Electric Company. Capacitor encapsulant and method of forming. 3,703,390, Cl. 106-54.000.
- Girling Limited: *See—*
  - Ingram, Brian; and Harries, David Anthony, 3,703,079.
  - Ingram, Brian; Harries, David Anthony; and Phoenix, Lancelot, 3,703,319.
- G.K.N. Sankey Limited: *See—*
  - Bowring, David John, 3,703,229.
- Glass, Alastair Malcolm; and Peterson, George Earl, to Bell Telephone Laboratories, Incorporated. Devices utilizing improved $LiNbO_3$ holographic medium. 3,703,328, Cl. 350-3.500.
- Glass, Neel W., to Les-Kare, Inc. Adjustable boot type composition horseshoe. 3,703,209, Cl. 168-18.000.
- Glave, Horst Dieter, to Olympia Werke AG. Typehead setting device. 3,703,230, Cl. 197-52.000.
- Globe-Union Inc.: *See—*
  - Rigsby, Canby A., Sr., 3,703,589.
- Glotin, Joseph M. H.: *See—*
  - Alric, Andre A. L.; Porte, Gilbert R. A.; Glotin, Joseph M. H.; Higounenq, Francis J.; and Boussin, Serge P., 3,703,675.
- Gluth, Norman P., to E-Systems, Inc. Noise signal generator for a digital speech synthesizer. 3,703,609, Cl. 179-1.0sa.
- Godar, Richard L.: *See—*
  - Spanos, Theodore, III; and Godar, Richard L., 3,703,587.
- Godwin, Robert H.: *See—*
  - Skupas, John A.; and Godwin, Robert H., 3,703,020.
- Goff, Denis Le, to Commissariat a l'Energie Atomique. Generator for delivering very-high-voltage square-topped pulses. 3,703,661, Cl. 315-155.000.
- Goggi, Charles P.; and Goggi, Eugene S. Aquatic game and equipment therefor. 3,703,011, Cl. 9-1.00a.
- Goggi, Eugene S.: *See—*
  - Goggi, Charles P.; and Goggi, Eugene S., 3,703,011.
- Gohe, Max: *See—*
  - Gohe, Raymond; Randoing, Jean Martial; Gohe, Max; and Evrard, Jean-Claude, 3,703,631.
- Gohe, Raymond: *See—*
  - Gohe, Raymond; Randoing, Jean Martial; Gohe, Max; and Evrard, Jean-Claude, 3,703,631.
- Gohe, Raymond; Randoing, Jean Martial; Gohe, Max; and Evrard, Jean-Claude, to Gohe, Raymond and Randoing, Jean Martial. Mean speed indicator systems for vehicles. 3,703,631, Cl. 235-151.320.
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- Gomersall, Earl Raymond; Meyer, Roger Paul; and Rejmaniak, Susan English, to Texas Instruments, Incorporated. Method for operating a manufacturing line. 3,703,725, Cl. 444-1.000.
- Goodbar, Reid C.; and Pressley, Arther Mitchell, to Riegel Textile Corporation. Antistatic yarn production. 3,703,073, Cl. 57-36.000.
- Goodrich, B. F., Company, The: *See—*
  - Di Liddo, Bart A., 3,703,539.
- Goodrich, Calvin C.; and Krummen, Eugene V., to Procter and Gamble Company, The. Rotating carton flap manipulator. 3,703,067, Cl. 53-374.000.
- Goodrich-Gulf Chemicals Inc.: *See—*
  - Bozik, John E.; Swift, Harold E.; and Wu, Ching-Yong, 3,703,483.
- Goodwater, Harry C., to Audio Alert Corporation. Fire alarm system. 3,703,721, Cl. 340-409.000.
- Goodyear Tire & Rubber Company, The: *See—*
  - Hunter, Edward E., 3,703,263.
  - Larson, William M.; and Jackson, William E., 3,703,426.
  - Laun, Charles L., III, 3,703,317.
  - Morton, Donald E., 3,703,488.
  - Wolfe, Merritt W., 3,703,423.
- Goodyear Tire and Rubber Company, The: *See—*
  - Habeck, Bruce W.; and Miller, Donald E., 3,703,586.
- Goralski, Christian T.: *See—*

- Gum, Wilson F., Jr.; and Goralski, Christian T., 3,703,515.
- Gordy, John; and Harris, Douglas R., to Stellar Industries Ltd. Electrolytic destruction of sewage. 3,703,453, Cl. 204-151.000.
- Goshima, Takeshi; and Miyasaka, Tooru, to Canon Kabushiki Kaisha. Camera provided with a recording device for a photographed date. 3,703,129, Cl. 95-1.100.
- Gotoh, Yutaro: *See*—
  - Iijima, Hiroshi; Terasawa, Masaji; Gotoh, Yutaro; and Tokita, Osamu, 3,703,418.
- Grabske, John P. Material spreader. 3,703,260, Cl. 239-666.000.
- Gradwohl, Donald R.; and Neal, Archie E., to Love, J. E., Company. Harvesting reel. 3,703,060, Cl. 56-226.000.
- Graefje, Heinz; and Flickinger, Erich, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of pure 2-ethyl hexanol by three stage distillation. 3,703,444, Cl. 203-78.000.
- Graham, Douglas J.: *See*—
  - Bhuta, Pravin G.; Johnson, Robert L.; and Graham, Douglas J., 3,703,463.
- Grand, Paul Sheldon; and Wixon, Harold Eugene, to Colgate-Palmolive Company. Fabric-softener compositions. 3,703,480, Cl. 252-524.000.
- Grant, Norman H.: *See*—
  - Alburn, Harvey E.; Clark, Donald E.; Grant, Norman H.; and Lapidus, Milton, 3,703,542.
  - Alburn, Harvey E.; Clark, Donald E.; Grant, Norman H.; and Lapidus, Milton, 3,703,543.
- Grassaud, Jean: *See*—
  - Cohen-Alloro, Richard; Cuvillier, Roger; and Grassaud, Jean, 3,703,237.
- Gray, G. A., Company, The: *See*—
  - Geyler, Arthur H., 3,703,027.
- Green, Joseph; Roth, Shirley H.; and Seipel, John J., to Cities Service Company. Intumescent coating composition. 3,703,487, Cl. 260-2.5fp.
- Gregory, Walter D., to Monarch Marking System Company, The. Web of multipart tickets and method of making and using same. 3,703,044, Cl. 40-2.000.
- Grelat, Maurice, to Ciba-Geigy AG. Process for the manufacture of 1,4-dihalo genanthraquinones. 3,703,533, Cl. 260-384.000.
- Griot, Rudolf G., to Sandoz-Wander, Inc. 3,4-Piphenyl-1-(4-hydroxyphenyl)-cyclopentane. 3,703,560, Cl. 260-619.00d.
- Groet, Nicholas H.; and Salminen, Wilho M., to Eastman Kodak Company. Photographic processes and materials. 3,703,375, Cl. 96-100.000.
- Grosse-Entrup, Hubert: *See*—
  - Geisthoff, Hubert; Welschof, Hans-Heinrich; and Grosse-Entrup, Hubert, 3,703,089.
- Grumman Aerospace Corporation: *See*—
  - Albanese, Victor J.; Johnson, Arthur E.; and Dietz, Charles L., 3,703,723.
- Gryctko, Carl E.; and Shaffer, Howard R., to I-T-E Imperial Corporation. Shunt trip with load terminal. 3,703,691, Cl. 335-20.000.
- GTE Automatic Electric Laboratories Incorporated: *See*—
  - Foster, James Harold, 3,703,708.
  - Kuster, Karl H., 3,703,717.
- Gualdi, Girogio: *See*—
  - Lugo, Luigi; Gualdi, Girogio; and Reni, Cesare, 3,703,547.
- Guevara, Alfredo Ruben: *See*—
  - Alsup, Michael John; and Guevara, Alfredo Ruben, 3,703,373.
- Guier, William. Pipe tongs. 3,703,111, Cl. 81-57.340.
- Gulf Oil Corporation, mesne: *See*—
  - Fortescue, Peter; and Shanstrom, Raymond T., 3,703,437.
- Gum, Wilson F., Jr.; and Goralski, Christian T., to Dow Chemical Company, The. 2-(dihalonitromethyl) quinoxalines. 3,703,515, Cl. 260-250.00r.
- Gundlach, Robert W.; and Vock, Richard C., to Xerox Corporation. Induction imaging system. 3,703,376, Cl. 96-1.00r.
- Gustafsson, Anders Christer, to SKF Industrial Trading and Development Company NV. Hydrostatic bearing. 3,703,322, Cl. 308-122.000.
- Gutheim, August W., to Carrier Corporation. Ceiling air terminal. 3,703,140, Cl. 98-40.00d.
- Gutman, Arnold D., to Stauffer Chemical Company. Phosphorus containing coumarins. 3,703,532, Cl. 260-343.20r.
- Gutterman, Kirill Davidovich: *See*—
  - Ilinsky, Nikolai Fedotovich; Gutterman, Kirill Davidovich; and Mikhailov, Vadim Vladimirovich, 3,703,643.
- Habeck, Bruce W.; and Miller, Donald E., to Goodyear Tire and Rubber Company, The. Stabilization of polymers against post-polymerization crosslinking. 3,703,586, Cl. 260-45.95r.
- Hacker, Harold R. Vibratory feeding apparatus. 3,703,233, Cl. 198-220.0dc.
- Hagemeister, Klaus, to Motoren- und Turbinen-Union Muenchen GmbH. Twin shaft gas turbine engine. 3,703,076, Cl. 60-39.160.
- Hamada, Mitsuo: *See*—
  - Sato, Katsumi; Nakamura, Takashi; Nakamura, Masaru; Hirasawa, Kazuo; Hamada, Mitsuo; Takahashi, Kenzi; Yashima, Masaaki; Ozaki, Toshiaki; Yamamoto, Sigeo; Ooishi, Tadashi; Fujinami, Akira; Horiuchi, Fukashi; and Nodera, Katsuji, 3,703,526.
- Hamilton, William H.; and Winsor, Jack O., to Lawrence Manufacturing Company. Roll attitude correcting means for tunneling machines. 3,703,314, Cl. 299-31.000.
- Hanada, Keiichi; Saito, Kimihiko; and Iwase, Akikazu. Fluidic counter device. 3,703,633, Cl. 235-201.0pf.
- Hanbicki, Richard B., to Madatron Corporation. Pneumatically operated counting device. 3,703,629, Cl. 235-98.000.
- Handy, Everett L. Cable stripper. 3,703,035, Cl. 30-90.900.
- Hansen, Kai H., to General Motors Corporation. Fuel tank vent control. 3,703,165, Cl. 123-136.000.
- Hansford, Rowland C., to Union Oil Company of California. Hydrogenation process and catalyst. 3,703,461, Cl. 208-143.000.
- Hara, Yoshiteru: *See*—
  - Komatsu, Noboru; Suzuki, Takatoshi; Ito, Takuo; Hara, Yoshiteru; and Asakura, Kouichi, 3,703,093.
- Hard, Robert A.; Stoyell, Loyal A.; and Young, Claude F., to Union Carbide Corporation. Annealing tower. 3,703,039, Cl. 34-174.000.
- Harkey, Charles N., to Jewell, J. D., Inc. Method of coating edible food articles. 3,703,382, Cl. 99-169.000.
- Harper, Donald E.: *See*—
  - Levesoue, Norman R.; and Harper, Donald E., 3,703,603.
- Harries, David Anthony: *See*—
  - Ingram, Brian; and Harries, David Anthony, 3,703,079.
  - Ingram, Brian; Harries, David Anthony; and Phoenix, Lancelot, 3,703,319.
- Harris, Bernard: *See*—
  - Butzow, Neil W.; and Harris, Bernard, 3,703,421.
- Harris, Douglas R.: *See*—
  - Gordy, John; and Harris, Douglas R., 3,703,453.
- Harris, Thomas G., to Armstrong Cork Company. Polyurethane millable gums based on polyesters having usaturation in both the acid and alcrhol portions. 3,703,498, Cl. 260-75.0nk.
- Hart, Lawrence M.: *See*—
  - Maksymiak, John; and Hart, Lawrence M., 3,703,157.
- Harvey, Donald M., to Eastman Kodak Company. Print stripping mechanism with self-aligning stripper fingers. 3,703,134, Cl. 95-13.000.
- Haskell, Theodore H.; and Watson, Donald R., to Parke, Davis & Company. Process for the production of 9-β-D-arabino-furanosyl) adenine, 5'-phosphate and salts thereof. 3,703,507, Cl. 260-211.50r.
- Hasselbohm, Sune Sigurd Sixten, to Telefonaktiebolaget L M Ericsson. Terminal block for slot connection of insulated conductors. 3,703,700, Cl. 339-198.00r.
- Hatcher, Cecil W.; and Warner, Gene. Pavement cutting machine. 3,703,316, Cl. 299-39.000.
- Haug, Albert, to Societe d'Etudes de Machines Thermiques. Internal combustion engine piston. 3,703,126, Cl. 92-186.000.
- Hay, Wayne W., to Airco, Inc. Heated vaporizer anesthesia machine. 3,703,172, Cl. 128-188.000.
- Hayashi, Koichiro: *See*—
  - Nakase, Yoshiaki; Yoshida, Masaru; Ito, Akihiko; Iwai, Tadashi; Hayashi, Koichiro; Okamura, Seizo; and Kojima, Katsumi, 3,703,454.
- Haycock, Ernest W.; and Prober, Richard, to Shell Oil Company. Method of carrying out electrochemical processes in a fluidized-bed electrolytic cell. 3,703,446, Cl. 204-23.000.
- Healy, Thomas Victor; and Pilbeam, Alan, to United Kingdom Atomic Energy Authority. Solvent extraction and electrowinning of copper. 3,703,451, Cl. 204-106.000.
- Heaton, Richard A.; and Mallory, James D., to Owens-Illinois, Inc. Method and apparatus for making glass container. 3,703,363, Cl. 65-67.000.
- Heckler & Koch, G.m.b.H.: *See*—
  - Horn, Kurt, 3,703,123.
- Heckman, Richard A.; and Cowles, John O., to United States of America, Atomic Energy Commission. Reduction of radioactive gas contamination of nuclear detonations in geological formations. 3,703,208, Cl. 166-247.000.
- Hedrei, Constantin, to Torano Limitee. System for controlling the setting of a quadruple band saw. 3,703,196, Cl. 143-22.000.
- Heidt, Marvin W., to Collins Radio Company. Current regulator with delayed turn-off. 3,703,679, Cl. 323-9.000.
- Heilmeier, George H.: *See*—
  - Goldmacher, Joel E.; and Heilmeier, George H., 3,703,331.
- Heit, Allyn Harold; and Williamson, James Norris, to Sybron Corporation. Per(halo-oxygen) acid oxidation, purification and recovery process and apparatus therefor. 3,703,508, Cl. 260-212.000.
- Hekimian Laboratories, Inc.: *See*—
  - Hekimian, Norris C., 3,703,686.
- Hekimian, Norris C., to Hekimian Laboratories, Inc. Phase lock loop and frequency discriminator employed therein. 3,703,686, Cl. 331-11.000.
- Hemming, Charles B.; and Bernholz, Edward L., to Champion International Corporation. Form board coated with a porous polymer film and a form oil, said film characterized by having solid particles distributed therethrough. 3,703,394, Cl. 117-5.100.
- Henderson, Edward. Piperazinium mono (acetylsalicylate). 3,703,519, Cl. 260-268.00r.
- Henkel & Cie G.m.b.H.: *See*—
  - Stein, Werner; and Flory, Klaus, 3,703,469.
- Henkel, Allmen P., to Western Printing Machinery Co. Planetary sheet slowdown and laydown mechanism. 3,703,282, Cl. 271-79.000.
- Henry, Jean-Claude, to Merlin Gerin, Societe Anonyme. Compressed gas circuit interrupter having a closed-cycle high pressure heating circulation. 3,703,619, Cl. 200-148.00e.
- Henschen, Homer Ernst; and Zell, Dale Richard, to AMP Incorporated. Flat conductor transmission cable. 3,703,604, Cl. 174-75.00r.

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- Hesen, Joseph A., to Del Mar Engineering Laboratories. Diagnostic and therapeutic exercise treadmill. 3,703,284, Cl. 272-69.000.
- Hester, Robert; and Pierson, Howard P., to Eastman Kodak Company. Waste recovery of thermoplastic continuous filamentary material. 3,703,347, Cl. 425-67.000.
- Heumann, Frederick K.: *See*—
  - Barnett, Allen M.; Galginaitis, Simeon V.; and Heumann, Frederick K., 3,703,656.
- Heusler, Karl; and Woodward, Robert Burns, to Ciba-Geigy Corporation. Isopropenylmercapto-3-alpha-acylamino-azetidin-4-ones. 3,703,512, Cl. 260-239.00a.
- Heyden, Vander; and Ernest, Eric, to AMP Incorporated. Scanner system. 3,703,627, Cl. 235-61.11g.
- Higashi, Kunio: *See*—
  - Nomura, Fumio; Takamiya, Yutaka; Mizuno, Sakuhiro; Higashi, Kunio; and Shimamoto, Toshihiro, 3,703,698.
- Higashida, Yutaka; and Imanishi, Kaoru, to Matsushita Electric Industrial Co., Ltd. Single take-up reel, automatic threading, magnetic tape duplicating apparatus. 3,703,612, Cl. 179-100.20e.
- Higgins, Louis W.: *See*—
  - Zubaty, Martin V.; and Higgins, Louis W., 3,703,614.
- Higounenq, Francis J.: *See*—
  - Alric, Andre A. L.; Porte, Gilbert R. A.; Glotin, Joseph M. H.; Higounenq, Francis J.; and Boussin, Serge P., 3,703,675.
- Hill, Raymond Roger. Keyboard teaching aid. 3,703,040, Cl. 35-5.000.
- Hill, Robert D., Jr.: *See*—
  - Lahm, James; and Hill, Robert D., Jr., 3,703,699.
- Hind, John D.: *See*—
  - Kusterer, James E., Jr.; and Hind, John D., 3,703,353.
- Hind, John D.; and Kelley, Matthias F., Jr., to Morris, Philip, Incorporated. Smoking product and method of making same. 3,703,177, Cl. 131-2.000.
- Hinden, Stephen David: *See*—
  - Shaw, Irving Franklin; and Hinden, Stephen David, 3,703,472.
- Hipotronics, Inc.: *See*—
  - Peschel, Stanley G., 3,703,692.
- Hirasawa, Kazuo: *See*—
  - Sato, Katsumi; Nakamura, Takashi; Nakamura, Masaru; Hirasawa, Kazuo; Hamada, Mitsuo; Takahashi, Kenzi; Yashima, Masaaki; Ozaki, Toshiaki; Yamamoto, Sigeo; Ooishi, Tadashi; Fujinami, Akira; Horiuchi, Fukashi; and Nodera, Katsuji, 3,703,526.
- Hirschkron, Robert: *See*—
  - Sturgess, Geoffrey John; Hoffman, Jacob Sherman; Vdoviak, John William; and Hirschkron, Robert, 3,703,259.
- Hitachi Electronics Engineering Co., Ltd.: *See*—
  - Kiyomiya, Hiromoto; Fukumiya, Yukio; Aoki, Mithuzi; and Mama, Hiromichi, 3,703,611.
- Hitachi, Ltd.: *See*—
  - Kawamura, Takao, 3,703,655.
  - Kiyomiya, Hiromoto; Fukumiya, Yukio; Aoki, Mithuzi; and Mama, Hiromichi, 3,703,611.
  - Kubo, Masaharu; Hori, Ryoichi; and Nagata, Minoru, 3,703,710.
  - Murakami, Tadao; Kikuchi, Ken; Tomozaki, Riyouzou; and Ohuchi, Yasushi, 3,703,227.
  - Ogura, Mitsuo; and Itoh, Satoshi, 3,703,706.
  - Okabe, Tadao; Oikawa, Mitsuru; Tanaka, Makoto; and Nagashiro, Waichi, 3,703,374.
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- Hodan, James J.; and Schall, William L., to Hooker Chemical Corporation. Hydrolytic stabilizer of phosphite esters and use as epoxy resin stabilizer. 3,703,496, Cl. 260-47.0ec.
- Hoffman, Jacob Sherman: *See*—
  - Sturgess, Geoffrey John; Hoffman, Jacob Sherman; Vdoviak, John William; and Hirschkron, Robert, 3,703,259.
- Hoffman, Sanford G.; Jackson, Earl V.; Starkweather, Gary K.; and Zucker, Edwin, to Xerox Corporation. Multiple exposure imaging apparatus. 3,703,335, Cl. 355-51.000.
- Hoffmann-La Roche Inc.: *See*—
  - Neugroschel, Eric; and Paterson, Alexander Scott, 3,703,337.
  - Newmark, Harold Leon, 3,703,580.
  - Saucy, Gabriel, 3,703,527.
- Hofmeister, Richard J.: *See*—
  - Gallas, John D.; and Hofmeister, Richard J., 3,703,323.
- Hohman, Terrel L. Revolving target having horizontally aligned hoops. 3,703,289, Cl. 273-55.00r.
- Hokko Chemical Industry Co., Ltd.: *See*—
  - Sato, Katsumi; Nakamura, Takashi; Nakamura, Masaru; Hirasawa, Kazuo; Hamada, Mitsuo; Takahashi, Kenzi; Yashima, Masaaki; Ozaki, Toshiaki; Yamamoto, Sigeo; Ooishi, Tadashi; Fujinami, Akira; Horiuchi, Fukashi; and Nodera, Katsuji, 3,703,526.
- Holcomb, Harry F.; and Martinez, Miguel, to Hopkins, Johns, University, The. Applanation tonometer. 3,703,095, Cl. 73-80.000.
- Holderbank Management & Consulting Ltd.: *See*—
  - Bosshard, Ulrich Walter, 3,703,277.
- Holland, John P.; and Aykens, Hein, to Frantz Manufacturing Company. Overhead door construction. 3,703,061, Cl. 52-475.000.
- Holler, Hans; Breidenbach, Josef; and Milles, Aloys, to Gebruder Holler GmbH. Apparatus for the production of synthetic plastic bags. 3,703,590, Cl. 156-583.000.
- Holtshouse, Dan K.: *See*—
  - Gillund, Arden G.; Holtshouse, Dan K.; Moretti, John A.; and Orlando, Vincent A., 3,703,300.
- Holub, Fred. Preparation of polyamide-acid solution in aqueous tertiary amine. 3,703,493, Cl. 260-29.20n.
- Honda, Makoto; Tanaka, Kyugo; and Watanabe, Itaru, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for the production of unsaturated acids. 3,703,548, Cl. 260-530.00n.
- Honeywell Inc.: *See*—
  - Johnson, Gary N.; and Wilson, Larry E., 3,703,681.
  - Nicholas, Merle E., 3,703,697.
- Honeywell Information Systems Inc.: *See*—
  - Duben, Franklin T., 3,703,711.
- Honjo, Satoru: *See*—
  - Tamai, Yasuo; Sato, Masamichi; Matsumoto, Seiji; and Honjo, Satoru, 3,703,400.
- Hooker Chemical Corporation: *See*—
  - Hodan, James J.; and Schall, William L., 3,703,496.
- Hoover Company, The: *See*—
  - Steele, Johathan Peter, 3,703,091.
- Hope, Paul: *See*—
  - Dobinson, Bryan; Hope, Paul; Winterbottom, Kenneth; and Shaw, Trevor, 3,703,352.
- Hopkins, Johns, University, The: *See*—
  - Holcomb, Harry F.; and Martinez, Miguel, 3,703,095.
- Horak, John. Liquid level control. 3,703,246, Cl. 222-17.000.
- Hori, Ryoichi: *See*—
  - Kubo, Masaharu; Hori, Ryoichi; and Nagata, Minoru, 3,703,710.
- Horiuchi, Fukashi: *See*—
  - Sato, Katsumi; Nakamura, Takashi; Nakamura, Masaru; Hirasawa, Kazuo; Hamada, Mitsuo; Takahashi, Kenzi; Yashima, Masaaki; Ozaki, Toshiaki; Yamamoto, Sigeo; Ooishi, Tadashi; Fujinami, Akira; Horiuchi, Fukashi; and Nodera, Katsuji, 3,703,526.
- Horn, Kurt, to Heckler & Koch, G.m.b.H. Stand for light firearms. 3,703,123, Cl. 89-40.00e.
- Horodysky, Andrew G., to Mobil Oil Corporation. Process for producing sulfurized olefins. 3,703,504, Cl. 260-139.000.
- Horodysky, Andrew G.; and Jaggers, William, to Mobil Oil Corporation. Preparation of sulfurized olefins. 3,703,505, Cl. 260-139.000.
- Horton, Edward E., to Deep Oil Technology, Inc. Subsea bunker construction. 3,703,207, Cl. 166-.500.
- Howard Hardware Products, Inc.: *See*—
  - Howard, Joel A., 3,703,234.
- Howard, Joel A., to Howard Hardware Products, Inc. Display packages for drills, bits and similar boring tools, providing means to test if proper size for a given bolt, screw or dowell. 3,703,234, Cl. 206-78.00b.
- Huber, Hans F., to National Cash Register Company, The. Encapsulation process. 3,703,474, Cl. 252-316.000.
- Huber, Hans F., to National Cash Register Company, The. Encapsulation process. 3,703,774, Cl. 252-316.000.
- Hubl, Julius: *See*—
  - Strehler, Richard; Eichinger, Hans; and Hubl, Julius, 3,703,226.
- Hubsch, Gunter: *See*—
  - .Gawlick, Heinz; Bendler, Hellmut; and Hubsch, Gunter, 3,703,121.
- Hudson, Arthur Franklin. Waistband construction. 3,703,008, Cl. 2-237.000.
- Hukee, Bernard J., Jr.: *See*—
  - Kelly, Clifford J.; and Hukee, Bernard J., Jr., 3,703,241.
- Hunter, Edward E., to Goodyear Tire & Rubber Company, The. Cord tensioning device. 3,703,263, Cl. 242-129.800.
- Hurth, Carl, Maschinen- und Zahnradfabrik: *See*—
  - Strehler, Richard; Eichinger, Hans; and Hubl, Julius, 3,703,226.
- I-T-E Imperial Corporation: *See*—
  - Cronin, John C., 3,703,664.
  - Gryctko, Carl E.; and Shaffer, Howard R., 3,703,691.
- Ichimura, Yutaka: *See*—
  - Takayama, Yuzi; Ichimura, Yutaka; Minmmi, Shunsuke; Aoyagi, Takanobu; and Takeda, Fumio, 3,703,491.
- ICI America Inc.: *See*—
  - Langhans, Roy Kenneth, 3,703,380.
- Ideal Toy Corporation: *See*—
  - Cooper, Julius, 3,703,048.
- Igel, Wolfgang: *See*—
  - Krauss, Paul; and Igel, Wolfgang, 3,703,023.
- Iijima, Hiroshi; Terasawa, Masaji; Gotoh, Yutaro; and Tokita, Osamu. Method of preventing rust on steel surface. 3,703,418, Cl. 148-6.140.
- Ilinsky, Nikolai Fedotovich; Gutterman, Kirill Davidovich; and Mikhailov, Vadim Vladimirovich, to Moskovsky Ordena Levina Energetichesky Institut. Supply source for electrical plants, furnishing a current the magnitude of which is independent of load impednce. 3,703,643, Cl. 307-52.000.
- Illing, Henry, to Kieley & Mueller, Inc. Low loss innervalve assembly. 3,703,273, Cl. 251-122.000.
- Imanishi, Kaoru: *See*—
  - Higashida, Yutaka; and Imanishi, Kaoru, 3,703,612.
- Imperial Chemical Industries, Limited: *See*—
  - Rouse, William, 3,703,099.
- Indian Industries, Inc.: *See*—
  - Smith, Max D.; and Adkins, Frank M., 3,703,287.
- Industrial Nucleonics Corporation: *See*—
  - Rice, James S., 3,703,436.
- Industrie Pirelli S.p.A.: *See*—

Maiocchi, Luigi, 3,703,202.

Industriewerk Schaeffler OHG: *See—*

Staneff, Stefan, 3,703,074.

Ingram, Brian; and Harries, David Anthony, to Girling Limited. Hydraulic actuating systems. 3,703,079, Cl. 60-54.50e.

Ingram, Brian; Harries, David Anthony; and Phoenix, Lancelot, to Girling Limited. Hydraulic systems for vehicles. 3,703,319, Cl. 303-21.00f.

Inoi, Takeshi; Sueyoshi, Koji; Fujii, Masahiro; Shoji, Kenjiro; Shudo, Akio; Yoshizaki, Takayoshi; and Yutaka, Matsuo, to Chisso Corporation. Method for producing β-amino-crotonamide. 3,703,518, Cl. 260-561.00n.

Institute of Gas Technology: *See—*

Linden, Henry R., 3,703,052.

Institutet for Halvledorforskning AB: *See—*

Wallmark, John Torkel, 3,703,666.

Integrated Ceilings, Inc.: *See—*

Curtis, Rolando T., 3,703,307.

International Business Machines Corporation: *See—*

Patel, Arvind M., 3,703,705.

Vora, Madhukar B., 3,703,420.

International Flavors & Fragrances, Inc.: *See—*

Theimer, Ernst T., 3,703,479.

International Research & Development Corporation: *See—*

McInnes, Alexander G. P., 3,703,223.

International Synthetic Rubber Company, The: *See—*

Duck, Edward William; Locke, John Michael; and Amass, Allan John, 3,703,566.

Interrante, Leonard V.: *See—*

Browall, Kenneth W.; and Interrante, Leonard V., 3,703,696.

Iowa State University Research Foundation: *See—*

Pohm, Arthur V.; and Zingg, Roy J., 3,703,713.

Irie, Namio; and Mizote, Masanori, to Nissan Motor Company, Limited. Electronic control device for automatic power transmission mechanism. 3,703,109, Cl. 74-866.000.

Isaksson, Sven-Erik, to Allmanna Svenska Elektriska Aktiebolaget. Furnace for sintering powder. 3,703,278, Cl. 266-24.000.

Isono, Kiyoshi: *See—*

Suzsuki, Saburo; Isono, Kiyoshi; and Nagatsu, Junsaku, 3,703,506.

Istituto de Angeli S.p.A.: *See—*

Casadio, Silvano; and Pala, Gianfranco, 3,703,528.

Casadio, Silvano; and Pala, Gianfranco, 3,703,534.

I.T.E. Imperial Corporation: *See—*

Zubaty, Martin V.; and Higgins, Louis W., 3,703,614.

Ito, Akihiko: *See—*

Nakase, Yoshiaki; Yoshida, Masaru; Ito, Akihiko; Iwai, Tadashi; Hayashi, Koichiro; Okamura, Seizo; and Kojima, Katsumi, 3,703,454.

Ito, Takuo: *See—*

Komatsu, Noboru; Suzuki, Takatoshi; Ito, Takuo; Hara, Yoshiteru; and Asakura, Kouichi, 3,703,093.

Itoh, Satoshi: *See—*

Ogura, Mitsuo; and Itoh, Satoshi, 3,703,706.

Itoh, Shigemasa: *See—*

Sakazume, Kaiichiro; Sakamoto, Eiichi; Itoh, Shigemasa; Fujimori, Noboru; and Baba, Shigeji, 3,703,377.

Itoyama, Kenji: *See—*

Kadowaki, Takashi; and Itoyama, Kenji, 3,703,568.

Iwai, Tadashi: *See—*

Nakase, Yoshiaki; Yoshida, Masaru; Ito, Akihiko; Iwai, Tadashi; Hayashi, Koichiro; Okamura, Seizo; and Kojima, Katsumi, 3,703,454.

Iwase, Akikazu: *See—*

Hanada, Keiichi; Saito, Kimihiko; and Iwase, Akikazu, 3,703,633.

I.W.S. Nominee Company Limited: *See—*

Dobinson, Bryan; Hope, Paul; Winterbottom, Kenneth; and Shaw, Trevor, 3,703,352.

Jackson, Earl V.: *See—*

Hoffman, Sanford G.; Jackson, Earl V.; Starkweather, Gary K.; and Zucker, Edwin, 3,703,335.

Jackson, Lynden Ashbrooke: *See—*

Ravenscroft, Ivor Albert; and Jackson, Lynden Ashbrooke, 3,703,690.

Jackson, William E.: *See—*

Larson, William M.; and Jackson, William E., 3,703,426.

Jackson, Winston J., Jr., to Eastman Kodak Company. Processable polyester compositions. 3,703,495, Cl. 260-30.60r.

Jacobe, Jean: *See—*

Allemand, Robert; Brey, Christian; and Jacobe, Jean, 3,703,638.

Jacquelin, Jean, to Compagnie Generale d'Electricite. Basic cell operating with hydrocarbon fuel. 3,703,416, Cl. 136-86.00r.

Jacyno, Anthony, to Murphy, G. W., Industries, Inc. Electric tool with its circuit components shielded from the motor parts. 3,703,646, Cl. 310-47.000.

Jaggers, William: *See—*

Horodysky, Andrew G.; and Jaggers, William, 3,703,505.

Japan Atomic Energy Research Institute: *See—*

Nakase, Yoshiaki; Yoshida, Masaru; Ito, Akihiko; Iwai, Tadashi; Hayashi, Koichiro; Okamura, Seizo; and Kojima, Katsumi, 3,703,454.

Sakurada, Ichiro; Okada, Toshio; and Uragami, Motoaki, 3,703,406.

Jasinski, Stephen: *See—*

Barone, Antonio C.; and Jasinski, Stephen, 3,703,046.

Jefferson Chemical Company, Inc.: *See—*

Malkemus, John D.; and Bell, John B., 3,703,538.

Jewell, J. D., Inc.: *See—*

Harkey, Charles N., 3,703,382.

Johansson, Lennart: *See—*

Frank, Kjell; and Johansson, Lennart, 3,703,680.

Johns-Manville Corporation: *See—*

Coglianese, Fred A.; and Mc Corkle, John E., 3,703,482.

Johnson, Arthur E.: *See—*

Albanese, Victor J.; Johnson, Arthur E.; and Dietz, Charles L., 3,703,723.

Johnson, Charles H.: *See—*

Burkhardt, Lawrence E.; and Johnson, Charles H., 3,703,145.

Johnson Diversified, Inc.: *See—*

Menne, Eugene P., 3,703,262.

Johnson, Edwin L. Buckle. 3,703,024, Cl. 24-68.0cd.

Johnson, Gary N.; and Wilson, Larry E., to Honeywell Inc. Thin film line sensor for measuring magnetic field, pressure, vibration or physical displacement. 3,703,681, Cl. 324-43.00r.

Johnson, Gary R.: *See—*

Kammerer, Archer W., Jr.; and Johnson, Gary R., 3,703,213.

Johnson, Miller C.: *See—*

Beaubien, Thomas S., 3,703,049.

Johnson, Robert L.: *See—*

Bhuta, Pravin G.; Johnson, Robert L.; and Graham, Douglas J., 3,703,463.

Johnson Service Company: *See—*

Thoma, Paul E., 3,703,257.

Jones, David P., to Construction Products Corporation. Manhole ladder step unit. 3,703,219, Cl. 182-46.000.

Jones, Giffin D.; and Tefertiller, Nancy B., to Dow Chemical Company, The. Dimerization of 2-aminomethyl-1, 3-butadiene. 3,703,553, Cl. 260-563.00r.

Jones, Loyd W., to Pan American Petroleum Corporation. Corrosion inhibitor containing sulfurized tall oil. 3,703,477, Cl. 252-391.000.

Jordan, John E., to Tennessee Valley Authority. Production of oil-prilled fertilizer materials. 3,703,364, Cl. 71-29.000.

Joslyn Manufacture and Supply Co.: *See—*

Saccomano, Joseph M.; and Ellis, John D., Jr., 3,703,279.

Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft: *See—*

Eilhardt, Bernd; and Pelz, Diethart, 3,703,034.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*

Komatsu, Noboru; Suzuki, Takatoshi; Ito, Takuo; Hara, Yoshiteru; and Asakura, Kouichi, 3,703,093.

Kadowaki, Koju: *See—*

Nakano, Mamoru; Kadowaki, Koju; Komurao, Isao; Koshikawa, Takeo; and Oshida, Bunzi, 3,703,550.

Kadowaki, Takashi; and Itoyama, Kenji, to Denki Kagaku Kogyo Kabushiki Kaisha. Chloroprene rubber composition. 3,703,568, Cl. 260-890.000.

Kaiser Aluminum & Chemical Corporation: *See—*

Kilpatrich, Stanley A.; and Niethammer, Woodard A., 3,703,097.

Kaiser, Werner: *See—*

Abendroth, Paul; and Kaiser, Werner, 3,703,283.

Kalium Chemicals Limited: *See—*

Kelly, Clifford J.; and Hukee, Bernard J., Jr., 3,703,241.

Kalle Aktiengesellschaft: *See—*

Busch, Walter; and Schwarzer, Franz, 3,703,570.

Kaltenegger, Benno. Rigid base earth compactor. 3,703,127, Cl. 94-48.000.

Kamb, Roy A.; and Fikse, Tyman H. Concrete casting apparatus. 3,703,271, Cl. 249-34.000.

Kammerer, Archer W., Jr.; and Johnson, Gary R., to Baker Oil Tools, Inc. Mud saver apparatus. 3,703,213, Cl. 175-318.000.

Kaneko, Shin-Ichi: *See—*

Yamamoto, Hisao; and Kaneko, Shin-Ichi, 3,703,513.

Karll, Robert E.: *See—*

Piasek, Edmund J.; Karll, Robert E.; and Lee, Richard J., 3,703,536.

Karubian, Ralph. Separable connection means for reciprocating saw blades. 3,703,036, Cl. 30-339.000.

Karubian, Ralph. Hand tool with magnetic brake. 3,703,654, Cl. 310-77.000.

Kassat, Harry; Kissel, Ernst; and Kolenda, Herbert, to Gea Luftkuhlergesellschaft Happel GmbH & Co. KG. Condenser for low boiling fractions in rectifying or distilling columns. 3,703,592, Cl. 202-185.00b.

Kawamura, Takao, to Hitachi, Ltd. Color cathode ray tubes of the shadow mask type. 3,703,655, Cl. 313-85.00s.

Kayashibara Company: *See—*

Okada, Shigetaka; Tsuyama, Naoto; Kurimoto, Masahi; and Sugimoto, Kaname, 3,703,440.

Keeney, Lawrence V.: *See—*

Viola, Ronald J.; and Keeney, Lawrence V., 3,703,621.

Keil, Joseph W., to Dow Corning Corporation. Process for foaming organic liquids. 3,703,486, Cl. 260-2.5ah.

Kelley, Matthias F., Jr.: *See—*

Hind, John D.; and Kelley, Matthias F., Jr., 3,703,177.

Kelley, Thomas F.: *See—*

Rosse, Thomas A.; Blackmer, David E.; Zindler, Jerrold; and Kelley, Thomas F., 3,703,336.

Kelly, Clifford J.; and Hukee, Bernard J., Jr., to Kalium Chemicals Limited. Method of storing particulate matter. 3,703,241, Cl. 214-152.000.

Kelly, Robert C., to Upjohn Company, The. Alkyl-2-alkyl-2,3-dicarboxy-5-norbornene-7-acetate intermediates for the total synthesis of elenolic acids and analogs thereof. 3,703,530, Cl. 260-346.600.

Kemper, Wayne G. Decorative plastic wall tile. 3,703,431, Cl. 161-6.000.

Kendall, Larry J., to Signetics Corporation. Integrated circuit with temperature compensation for a field effect transistor. 3,703,650, Cl. 307-310.000.

Kent, William C., to Western Electric Company, Incorporated. Apparatus for forming wire springs and welding contacts to the springs. 3,703,029, Cl. 29-208.00d.

Kerfoot, Oliver C.; and Duchmann, George W., to Continental Oil Company. Purification of detergent alkylates. 3,703,559, Cl. 260-674.00a.

Kern, Dale W., to Riegel Textile Corporation. Simulated pre-folded diaper construction. 3,703,175, Cl. 128-284.000.

Keshi, Akizo; Yoshii, Kunio; Yokoo, Makoto; and Nakai, Kaichi, to Takeda Chemical Industries, Ltd. Polyurethane foam process using distannoxane/ aminoalochol catalyst combination. 3,703,484, Cl. 260-2.5ac.

Kessler, Milton. Extensible perforate floor mat and friction device. 3,703,059, Cl. 52-177.000.

Kesten, Patrick N.; Webb, Richard A.; and Bedford, Raymond E., to General Motors Corporation. Method for processing resistor glass seal compositions employing organic liquid. 3,703,387, Cl. 106-46.000.

Kieley & Mueller, Inc.: *See—*

Illing, Henry, 3,703,273.

Kikuchi, Ken: *See—*

Murakami, Tadao; Kikuchi, Ken; Tomozaki, Riyouzou; and Ohuchi, Yasushi, 3,703,227.

Kikuchi, Makoto; and Suzuki, Isao, to Toyoda Koki Kabushiki Kaisha. Inspecting system with a branch chute for sampling finished workpieces. 3,703,100, Cl. 73-423.00r.

Kilpatrich, Stanley A.; and Niethammer, Woodard A., to Kaiser Aluminum & Chemical Corporation. Method and system for measuring sheet flatness. 3,703,097, Cl. 73-159.000.

Kim, Dong H.; and Santilli, Arthur A., to American Home Products Corporation. 7-Alkyl-2,5-disubstituted-7H-pyrrolo[2,3,α] pyrimidine-6-carbonitriles. 3,703,516, Cl. 260-256.50r.

Kim, Dong H.; and Santilli, Arthur A., to American Home Products Corporation. 4-[Carboxyalkyl)amino]-5-pyrimidinecarboxylic acid esters. 3,703,517, Cl. 260-256.40n.

Kim, Young K.: *See—*

Davis, David S.; and Kim, Young K., 3,703,556.

Kimura, Hiroshiro: *See—*

Saito, Norio; and Kimura, Hiroshiro, 3,703,588.

Kirk, William W., to Upjohn Company, The. Coated seeds and process for coating seeds. 3,703,404, Cl. 117-72.000.

Kirsch, Maurice: *See—*

Bosquain, Maurice; Bourjot, Marcel; and Kirsch, Maurice, 3,703,028.

Kishikawa, Zitsuichi; and Maekawa, Sadafumi, to Nihon Nohyku Kabushiki Kaisha. Insecticidal phosphoric acid esters. 3,703,599, Cl. 424-217.000.

Kissel, Ernst: *See—*

Kassat, Harry; Kissel, Ernst; and Kolenda, Herbert, 3,703,592.

Kitajima, Masao; Tsuneoka, Yoozi; and Kondo, Asaji, to Fuji Photo Film Co., Ltd. Method of producing micro-capsules enclosing acetylsalicylic acid therein. 3,703,576, Cl. 424-35.000.

Kiyomiya, Hiromoto; Fukumiya, Yukio; Aoki, Mithuzi; and Mama, Hiromichi, to Hitachi, Ltd. and Hitachi Electronics Engineering Co., Ltd. Telephone system. 3,703,611, Cl. 179-99.000.

Klein, Norman E., to Deering Milliken Research Corporation. Coating apparatus. 3,703,154, Cl. 118-6.000.

Kleppen, Arthur L., Jr., to Conley and Kleppen Enterprises, Inc. Gas-shielded arc torch. 3,703,622, Cl. 219-75.500.

Klett, George G.; and Akerstrom, Gary L., to Building Block Modules, Inc. Modular building construction and erection system utilizing selectively oriented modules. 3,703,058, Cl. 52-79.000.

KMS Industries, Inc.: *See—*

Thomas, Carlton E., 3,703,724.

Knechtel, Wilhelm Josef; and Schaffer, Detlef. Electrophotographic apparatus. 3,703,334, Cl. 355-11.000.

Knowlton, Kenneth Charles, to Bell Telephone Laboratories, Incorporated. Method for generating random numerical quantities. 3,703,727, Cl. 444-1.000.

Kober, AG, Firma: *See—*

Koester, Waldemar, 3,703,014.

Koester, Waldemar, to Kober, AG, Firma. Tiltable bearing means, especially for bridges. 3,703,014, Cl. 14-16.000.

Kohashi, Tadao: *See—*

Nakamura, Shigeaki; Nakamura, Tadao; and Kohashi, Tadao, 3,703,594.

Kohtani, Yutaka, to Canon Kabushiki Kaisha. Magnetic teaching machine with selectively operable repetitive and non-repetitive learning modes. 3,703,041, Cl. 35-35.00c.

Kojima, Katsumi: *See—*

Nakase, Yoshiaki; Yoshida, Masaru; Ito, Akihiko; Iwai, Tadashi; Hayashi, Koichiro; Okamura, Seizo; and Kojima, Katsumi, 3,703,454.

Kolenda, Herbert: *See—*

Kassat, Harry; Kissel, Ernst; and Kolenda, Herbert, 3,703,592.

Koller, Floyd G., to Auto-Valve, Inc. Drain valve. 3,703,189, Cl. 137-329.060.

Kollmorgen Corporation: *See—*

Blowers, William L., 3,703,651.

Breneman, Edwin J., 3,703,338.

Komatsu, Noboru; Suzuki, Takatoshi; Ito, Takuo; Hara, Yoshiteru; and Asakura, Kouichi, to Aisin Seiki Kabushika Kaisha and Kabushiki Kaisha Toyota Chuo Kenkyusho. Process and apparatus for performing a simultaneous and combined press-forming and heat-treatent of steel stock. 3,703,093, Cl. 72-342.000.

Komurao, Isao: *See—*

Nakano, Mamoru; Kadowaki, Koju; Komurao, Isao; Koshikawa, Takeo; and Oshida, Bunzi, 3,703,550.

Kondo, Asaji: *See—*

Kitajima, Masao; Tsuneoka, Yoozi; and Kondo, Asaji, 3,703,576.

Konecky, Milton S., to Esso Research and Engineering Company. Decahydroacenaphthene as a high energy fuel. 3,703,361, Cl. 44-80.000.

Konishiroku Photo Industry Co., Ltd.: *See—*

Sakazume, Kaiichiro; Sakamoto, Eiichi; Itoh, Shigemasa; Fujimori, Noboru; and Baba, Shigeji, 3,703,377.

Kookootsedes, Gust J.: *See—*

Antonen, Robert C.; Kookootsedes, Gust J.; and Field, Arthur J., 3,703,562.

Koons, Russell E., to Monsanto Company. Asphaltic compositions. 3,703,393, Cl. 106-279.000.

Korenicki, William John: *See—*

Masson, Narinder; Korenicki, William John; and Lechner, Walter Ludwig, 3,703,098.

Kosem, Marion: *See—*

Alessio, Sergio A.; Chow, Weichien; and Kosem, Marion, 3,703,033.

Koshikawa, Takeo: *See—*

Nakano, Mamoru; Kadowaki, Koju; Komurao, Isao; Koshikawa, Takeo; and Oshida, Bunzi, 3,703,550.

Koski, John T. Rainproof ventilated plastic sheet material for rainwear and method of making same. 3,703,432, Cl. 161-110.000.

Kostur, Nykola. Grain dispensing apparatus. 3,703,247, Cl. 222-442.000.

Kovats, Andre. Gas turbine locomotive. 3,703,146, Cl. 105-61.500.

Krauss & Reichert Spezialmachinenfabrik: *See—*

Langhoff, Boris, 3,703,056.

Krauss, Paul; and Igel, Wolfgang, to Zinser-Textilmaschinen Gesellschaft mit beschrankter Haftung. Apparatus for rendering textile slivers uniform. 3,703,023, Cl. 19-240.000.

Krausz, Johann; and Feichtinger, Johan, to Vereinigte Osterreichische Eisen- und Stahlwerk Aktiengesellschaft. Method for the production or restoration of working rolls for hot rolling of metallic flat products. 3,703,057, Cl. 51-326.000.

Krebs, James N.; and Paulson, Elmir E., to General Electric Company. Gas turbine engine. 3,703,081, Cl. 60-226.00r.

Krummen, Eugene V.: *See—*

Goodrich, Calvin C.; and Krummen, Eugene V., 3,703,067.

Kubicek, Donald H.; and Zuech, Ernest A., to Phillips Petroleum Company. Olefin conversion using complexes of Cu, Ag and Au with organoaluminums. 3,703,561, Cl. 260-683.00d.

Kubo, Masaharu; Hori, Ryoichi; and Nagata, Minoru, to Hitachi, Ltd. Semiconductor memory. 3,703,710, Cl. 340-173.0ff.

Kuchenbecker, Morris William, to American Can Company. Food product package. 3,703,383, Cl. 99-171.000.

Kuhle, Engelbert: *See—*

Nast, Roland; Kuhle, Engelbert; and Abele, Manfred, 3,703,500.

Kulick, Bruno; and Lamneck, Karlheinz, to Lansing Bagnall Limited. Vehicle with manually operated steering system. 3,703,217, Cl. 180-99.000.

Kumamoto, Riyouzi: *See—*

Ogata, Nobutaka; Kumamoto, Riyouzi; and Asada, Shuzi, 3,703,043.

Kunz, Hans J., to Corning Glass Works. Electroluminescent diode configuration and method of forming the same. 3,703,670, Cl. 317-235.00r.

Kuraray Co., Ltd.: *See—*

Ohnishi, Shigekazu; Nishishita, Masaharu; and Takimoto, Hisateru, 3,703,403.

Kurimoto, Masahi: *See—*

Okada, Shigetaka; Tsuyama, Naoto; Kurimoto, Masahi; and Sugimoto, Kaname, 3,703,440.

Kuster, Karl H., to GTE Automatic Electric Laboratories Incorporated. Voltage/frequency ratio monitor for A.C. signals. 3,703,717, Cl. 340-253.00y.

Kusterer, James E., Jr.; and Hind, John D., to Council on Library Resources, Inc., mesne. Gaseous diffusion paper deacidification. 3,703,353, Cl. 21-58.000.

Kutchma, Edward K. Ski teaching aid. 3,703,299, Cl. 280-11.37e.

Kutino, Tsuyoshi: *See—*

Yamagishi, Hidehisa; Yokoi, Fumitoshi; and Kutino, Tsuyoshi, 3,703,407.

Kuwada, Yutaka: *See—*

Tawada, Hiroyuki; Meguro, Kanji; and Kuwada, Yutaka, 3,703,525.

La Chance, Murdock H., to Xerox Corporation. Method of hermetically sealing silicon to a low expansion alloy. 3,703,306, Cl. 287-189.365.

Labtron Corporation of America: *See—*

Simopoulos, Nicholas T.; and Tsui, James B. Y., 3,703,685.

Laforest, Jean; and Miton, Pierre, to Rhone-Poulenc S.A. Dialysers and spacer frames therefor. 3,703,466, Cl. 210-321.000.

Lahm, James; and Hill, Robert D., Jr., to Spectrol Electronics Corporation. Trimmer potentiometer having means for lead screw misalignment compensation. 3,703,699, Cl. 338-180.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitatirn des Procedes Georges Claude: *See—*

Bosquain, Maurice; Bourjot, Marcel; and Kirsch, Maurice, 3,703,028.

Lamanche, Jean; and Buisson, Gerard, to Compagnie de Saint-Gobain. Apparatus for manufacturing products composed of fibers agglomerated with synthetic resins. 3,703,396, Cl. 117-21.000.

Lamm, Heinz, to Daimler-Benz Aktiengesellschaft. Rotary piston internal combustion engine. 3,703,163, Cl. 123-8.090.

Lamneck, Karlheinz: *See—*

Kulick, Bruno; and Lamneck, Karlheinz, 3,703,217.

Lang, Paul Wentworth, 1/2 to du Pont, Michael H. Multiple image film exposure and projection system. 3,703,135, Cl. 95-36.000.

Langhans, Roy Kenneth, to ICI America Inc. Baking process using polyoxyethylene fatty ethers as softeners and conditioners. 3,703,380, Cl. 99-91.000.

Langhoff, Boris, to Krauss & Reichert Spezialmachinenfabrik. Knife grinding device for a motor-driven cutting tool. 3,703,056, Cl. 51-246.000.

Langston, Benny: *See—*

Salmon, David; Wierzbicki, Edward J.; Langston, Benny; and Beegle, Donald W., 3,703,340.

Lansing Bagnall Limited: *See—*

Kulick, Bruno; and Lamneck, Karlheinz, 3,703,217.

Lapidus, Milton: *See—*

Alburn, Harvey E.; Clark, Donald E.; Grant, Norman H.; and Lapidus, Milton, 3,703,542.

Alburn, Harvey E.; Clark, Donald E.; Grant, Norman H.; and Lapidus, Milton, 3,703,543.

Lareau, Norman N., to Eastman Kodak Company. X-ray film cassette with identification exposure window and exposure indicator. 3,703,272, Cl. 250-67.000.

Larsen, Helge: *See—*

Palyi, Leslie; and Larsen, Helge, 3,703,200.

Larson, William M.; and Jackson, William E., to Goodyear Tire & Rubber Company, The. Method of making polyester laminates. 3,703,426, Cl. 156-308.000.

Lasco, Ralph H., to Diamond Shamrock Corporation. Sequestering agents for metal ion contamination of alkyl-aromatic hydrocarbons. 3,703,473, Cl. 252-188.300.

Laun, Charles L., III, to Goodyear Tire & Rubber Company, The. Vehicle wheel and brake with heat shield. 3,703,317, Cl. 301-6.00r.

Lauro, Luciano: *See—*

Pomella, Piero; and Lauro, Luciano, 3,703,327.

Laverda, Pietro, to Pietro Laverda S.p.A. Device for automatic self-levelling of the body of a threshing-harvesting machine. 3,703,298, Cl. 280-6.00h.

Lawrence Manufacturing Company: *See—*

Hamilton, William H.; and Winsor, Jack O., 3,703,314.

Leach, George J., to Chartered Enterprises, mesne. Binder for water skis. 3,703,013, Cl. 9-310.0aa.

Leaper, Joseph Michael Faraday; and Raman, Harvey Peter John, to Amchem Products, Inc. Preparation of 3-amino-2,5-dichlorobenzoic acid. 3,703,546, Cl. 260-518.00a.

Learning Appliances Limited: *See—*

Rubenstein, Leonard, 3,703,608.

Lechner, Walter Ludwig: *See—*

Masson, Narinder; Korenicki, William John; and Lechner, Walter Ludwig, 3,703,098.

Lee, Alex Y.: *See—*

Gershberg, David N.; and Lee, Alex Y., 3,703,722.

Lee, Richard J.: *See—*

Piasek, Edmund J.; Karll, Robert E.; and Lee, Richard J., 3,703,536.

Lemler, Seymour A. Scoop for animal waste. 3,703,158, Cl. 119-1.000.

Leningradskoe Proektno-Experimetalnoe Otdelenie Vsesojuz-Nogo Gosudarstvennogo Nauchno Issledovatelskogo i Proekt-Nogo Instituta Vniiproektelektromontash, Dnepropetrovskaya ulitsa: *See—*

Povolotsky, Aron Markovich; Sushkin, Vyacheslav Petrovich; Fateichev, Anatoly Semenovich; and Gavrilov, Nikolai Vasilievich, 3,703,025.

Lerich, Lester. Expansion bolt. 3,703,119, Cl. 85-67.000.

Les-Kare, Inc.: *See—*

Glass, Neel W., 3,703,209.

Lever Brothers Company: *See—*

Martin, Donald J., 3,703,583.

Levesoue, Norman R.; and Harper, Donald E., to Circuit-Stik, Inc. Rub-on sub-element for electronic circuit board. 3,703,603, Cl. 174-68.500.

Levine, Charles A., to Dow Chemical Company, The. Process for generating electrical energy comprising melting the anode metal in the reservoir prior to melting the anode metal in the electrolyte fibers. 3,703,412, Cl. 136-6.000.

Levine, Ralph, to Cities Service Company. Process for preparing a pure hydrogenated cycloolefin. 3,703,558, Cl. 260-666.00p.

Levinn, Robert N., to American Thermostat Corporation. Liquid level sensing system. 3,703,693, Cl. 337-1.000.

Levy, Leon B., to Celanese Corporation. Process for the conversion of olefins to unsaturated aldehydes and acids. 3,703,551, Cl. 260-533.000.

Lewis, Fred I. Vehicle seat belt non-use warning signal switch mounting. 3,703,618, Cl. 250-85.00r.

Leyland Gas Turbines Limited: *See—*

Barnard, Mark Cary Sedgwick, 3,703,206.

Liebert, Oskar; and Theilacker, Klaus, to Maschinenfabrik Augsburg-Nurnberg AG. Sheet feeding apparatus having gripper control, for use with printing machines. 3,703,281, Cl. 271-79.000.

Lietz, Ernst, G.m.b.H.: *See—*

Bromer, Heinz; and Meinert, Norbert, 3,703,389.

Lin, Chao-Han; and Wright, Arthur J., to National Cash Register Company, The. Mark-forming record materials and process for their use. 3,703,397, Cl. 117-36.200.

Lincks, Hans; and Weigmann, Erich W., to Messerschmitt-Bolkow-Blohm GmbH. Control unit for the lift engines of vertical and short takeoff aircraft. 3,703,266, Cl. 244-52.000.

Lindemann, Martin K. Fusible thermosetting powder resin and production thereof. 3,703,499, Cl. 260-77.5at.

Linden, Henry R., to Institute of Gas Technology. Process for production of pipeline quality gas from oil shale. 3,703,052, Cl. 48-215.000.

Lipowski, Stanley A.; and Queen, John C., Jr., to Diamond Shamrock Corporation. Polyacrylamide-epoxidized aminoplast-urea condensates. 3,703,563, Cl. 260-836.000.

List, Hans: *See—*

Schreiber, Erich; Freyn, Fritz; and Noraberg, John, 3,703,178.

Little, William S., Jr.; and Townsend, Robert H., to Xerox Corporation. Liquid applicator. 3,703,459, Cl. 204-300.

Lock, Michael V., to Deering Milliken Research Corporation. Two step modification of textile materials. 3,703,351, Cl. 8-116.300.

Locke, John Michael: *See—*

Duck, Edward William; Locke, John Michael; and Amass, Allan John, 3,703,566.

Loewe Opta G.m.b.H.: *See—*

Dennewitz, Rolf Dieter; and Breitkreuz, Lutz, 3,703,662.

London, Arnold, to Motorola, Inc. Photocurrent cross talk isolation. 3,703,669, Cl. 317-235.000.

Long, Thomas F.: *See—*

Beyer, Henry R.; Long, Thomas F.; and De Sipio, Richard G., 3,703,719.

Longin, Mikail Lvovich: *See—*

Dovgalev, Stepan Ilich; Ermolenko, Igor Nikolaevich; Buglov, Evgeny Danilovich; Danilov, Ivan Petrovich; and Longin, Mikail Lvovich, 3,703,438.

Longwell, John P., to Esso Research and Engineering Company. Hybrid rocket propellant using polymeric sponge and liquid oxidizer. 3,703,080, Cl. 60-219.000.

Losee, Walter J., to Atlas Engineering Products, Inc. Construction element with anchor teeth. 3,703,304, Cl. 287-20.921.

Love, J. E., Company: *See—*

Gradwohl, Donald R.; and Neal, Archie E., 3,703,060.

Lowenthal, Serge: *See—*

Broussaud, Georges; and Lowenthal, Serge, 3,703,640.

Luebs, Donald F.; and Ashby, Frederick R., to Champion International Corporation. Apparatus for making textured panels. 3,703,198, Cl. 144-2.00r.

Lugiewicz, Robert C., to Cubb-Pac Corporation. Packaging of meat. 3,703,064, Cl. 53-122.000.

Lugo, Luigi; Gualdi, Girogio; and Reni, Cesare, to Societa' Italiana Resine S.p.A. Method of preparing phthalic acids. 3,703,547, Cl. 260-524.00r.

Lugscheider, Walter, to Siemens Aktiengesellschaft. Method of coating niobium with copper. 3,703,447, Cl. 204-37.00r.

Lukens Steel Company: *See—*

Scott, William W., Jr., 3,703,600.

Lummus, James L.; and Field, Leroy J., to Pan American Petroleum Corporation. Vertical separator for drilling fluids. 3,703,467, Cl. 210-522.000.

Lunel, Jean: *See—*

Florent, Jean; Lunel, Jean; and Renaut, Jacques, 3,703,439.

Lusti, John; and Doane, John Charles, to Otis Elevator Company. Solid state control system. 3,703,222, Cl. 187-29.00r.

Lutz, Warren R. Basketball apparatus including a past stabilizing slot. 3,703,291, Cl. 273-85.00r.

Lystad, Leonard A., to General Motors Corporation. Dual configuration vehicle body. 3,703,310, Cl. 296-15.000.

Macleod, David E., to Carrier Corporation. Self-contained air conditioning unit. 3,703,087, Cl. 62-262.000.

Madatron Corporation: *See—*

Hanbicki, Richard B., 3,703,629.

Maeda, Kazuo, to Mitsui Shipbuilding and Engineering Co., Ltd. Method for building ships. 3,703,153, Cl. 114-77.00r.

Maekawa, Sadafumi: *See—*

Kishikawa, Zitsuichi; and Maekawa, Sadafumi, 3,703,599.

Magnatex Limited: *See—*

Tomlin, Robert Derrick, 3,703,270.

Maher, Pat. Tank heater. 3,703,167, Cl. 126-350.00r.

Maida, Osamu, to Nippon Kogaku. Timer for a camera. 3,703,649, Cl. 307-293.000.

Maierson, Theodore; Roe, Harry L., Jr.; and Williams, James E., to National Cash Register Company, The. Pre-fluxed solder powder. 3,703,254, Cl. 228-56.000.

Maiocchi, Luigi, to Industrie Pirelli S.p.A. Tread ring for removable tread tires. 3,703,202, Cl. 152-175.000.

Maksymiak, John; and Hart, Lawrence M., to Xerox Corporation. Method and apparatus for forming a uniform layer of powder developer on a surface. 3,703,157, Cl. 118-637.000.

Malkemus, John D.; and Bell, John B., to Jefferson Chemical Company, Inc. Production of anhydrous β-hydroxyalkyl carbamates. 3,703,538, Cl. 260-482.00c.

Mallinckrodt Chemical Works: *See—*

Baron, Frank A., 3,703,598.

Mallory, James D.: *See—*

Heaton, Richard A.; and Mallory, James D., 3,703,363.

Malmstrom, Sven Erik, to Forsheda Gummifabrik AB. Sealing between a rotary and a stationary member. 3,703,296, Cl. 277-25.000.

Mama, Hiromichi: *See—*

Kiyomiya, Hiromoto; Fukumiya, Yukio; Aoki, Mithuzi; and Mama, Hiromichi, 3,703,611.

Manganaro, James L.: *See—*

Carson, William N., Jr.; and Manganaro, James L., 3,703,358.

Mannheimer, Hans S. Diamido amino sulfonates and methods for preparing same. 3,703,535, Cl. 260-401.000.

Marion, Thomas E.; and Priborsky, Godfrey M., to Maryland Cup Corporation. Apparatus for feeding heat shrinkable plastic film and capping containers therewith. 3,703,066, Cl. 53-296.000.

Marki, Gustav Paul: *See—*

Ebbe, Grace Lakin; and Marki, Gustav Paul, 3,703,610.

Marradi, Renato. Automatic tray-loading device for cigarette packaging machines. 3,703,242, Cl. 214-302.000.

Marshall, Claude J., to North American Rockwell Corporation. Retaining means for wheel trim members. 3,703,318, Cl. 301-37.00r.

Martin, Clyde J., to Martin Industries, Inc. Gauge actuated circuit control unit. 3,703,616, Cl. 200-56.00r.

Martin, Donald J., to Lever Brothers Company. Anticalculus formulations. 3,703,583, Cl. 424-54.000.

Martin Industries, Inc.: *See—*

Martin, Clyde J., 3,703,616.

Martinez, Miguel: *See—*

Holcomb, Harry F.; and Martinez, Miguel, 3,703,095.

Marum, Edward C.: *See—*

Niesen, George P.; and Marum, Edward C., 3,703,156.

Marx, Matthias; Becker, Ernst; and Spoor, Herbert, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Coating compositions for electrodeposition. 3,703,596, Cl. 260-29.6ta.

Maryland Cup Corporation: *See—*

Marion, Thomas E.; and Priborsky, Godfrey M., 3,703,066.

Maschinenfabrik Augsburg-Nurnberg AG: *See—*

Liebert, Oskar; and Theilacker, Klaus, 3,703,281.

Massachusetts Institute of Technology: *See—*

Nugent, John B., 3,703,084.

Massey-Ferguson Industries Limited: *See—*

Schnarr, Howard A., 3,703,325.

Masson, Narinder; Korenicki, William John; and Lechner, Walter Ludwig. Compound fluid meter. 3,703,098, Cl. 73-231.00r.

Mast, Phillip W.; and Beaubien, Laurent A., to United States of America, Navy. Close packing of uniform size spheres. 3,703,012, Cl. 9-8.000.

Masuda, Shiro; Ohkubo, Takashi; and Furukawa, Yu, to Denki Kagaku Kogyo Kabushiki Kaisha. Process for the preparation of aqueous emulsions of water-resistance vinyl acetate-ethylene copolymers. 3,703,492, Cl. 260-27.0ev.

Matsue, Shigeki, to Nippon Electric Company, Ltd. High speed associative memory circuits. 3,703,709, Cl. 340-173.0ff.

Matsumoto, Seiji: *See—*

Tamai, Yasuo; Sato, Masamichi; Matsumoto, Seiji; and Honjo, Satoru, 3,703,400.

Matsushita Electric Industrial Co., Ltd.: *See—*

Higashida, Yutaka; and Imanishi, Kaoru, 3,703,612.

Nakamura, Shigeaki; Nakamura, Tadao; and Kohashi, Tadao, 3,703,594.

Nomura, Fumio; Takamiya, Yutaka; Mizuno, Sakuhiro; Higashi, Kunio; and Shimamoto, Toshihiro, 3,703,698.

Ogata, Nobutaka; Kumamoto, Riyouzi; and Asada, Shuzi, 3,703,043.

Yamamoto, Kozo; and Takamiya, Takehisa, 3,703,295.

Matthews, Merton Louis, to Maxson Automatic Machinery Company. Rotary paper-cutter knife structure. 3,703,117, Cl. 83-677.000.

Maxson Automatic Machinery Company: *See—*

Matthews, Merton Louis, 3,703,117.

Maydan, Dan, to Bell Telephone Laboratories, Incorporated. Intracavity modulator. 3,703,687, Cl. 331-94.500.

Mc Corkle, John E.: *See—*

Coglianese, Fred A.; and Mc Corkle, John E., 3,703,482.

Mc Voy, David S., to Coaxial Scientific Corporation. Channel monitoring system for audience survey purposes. 3,703,684, Cl. 325-31.000.

McAtee, Jon R., to Microdyne Corporation. Microwave varactor-tuned resonator for preselector. 3,703,689, Cl. 333-82.00b.

McCartney, Roger L., to Celanese Coatings Company. Vinylnorbornene/maleic anhydride copolymers and process of preparing same. 3,703,501, Cl. 260-78.50r.

McCaw, Thomas M. Differential. 3,703,108, Cl. 74-713.000.

McCrary, Avis L., to Dow Chemical Company, The. Polyalkylenepolyamines with N-(2-hydroxy-3-sulfopropyl) groups. 3,703,545, Cl. 260-513.00n.

McDonald, Hugh G.: *See—*

Vitter, Albert L., Jr.; and McDonald, Hugh G., 3,703,096.

McDonnell Douglas Corporation: *See—*

Arrance, Frank C., 3,703,413.

Rosa, Albert G.; and Birrer, George W., 3,703,417.

Smatkr, Joseph S., 3,703,414.

McEnery, John, to Molins Machine Company Limited. Cigarette testing apparatus. 3,703,235, Cl. 209-79.000.

McGrath, Charles E.: *See—*

Smith, William; and McGrath, Charles E., 3,703,124.

McInnes, Alexander G. P., to International Research & Development Corporation. Vehicle secondary braking system with continuous belt. 3,703,223, Cl. 188-5.000.

McKinney, John S., to American Metal Climax, Inc. Sheet metal roofing/siding system with seperable fastener. 3,703,062, Cl. 52-545.000.

McNally, Byron L. Flood alarm. 3,703,715, Cl. 340-240.000.

McNeil Laboratories, Inc.: *See—*

Plostnieks, Janis, 3,703,522.

Meadows, Paul L.: *See—*

Delmonte, John; Meadows, Paul L.; and Benavides, Augusto E., 3,703,425.

Medidyne Corporation: *See—*

Smith, Gordon E., 3,703,174.

Meguro, Kanji: *See—*

Tawada, Hiroyuki; Meguro, Kanji; and Kuwada, Yutaka, 3,703,525.

Meinert, Norbert: *See—*

Bromer, Heinz; and Meinert, Norbert, 3,703,389.

Melezoglu, Cevdet, to Corning Glass Works. Method of making a magnetic recording medium. 3,703,411, Cl. 117-237.000.

Menne, Eugene P., to Johnson Diversified, Inc. Push botton lock for fishing reels. 3,703,262, Cl. 242-84.20a.

Merck & Co., Inc.: *See—*

Shen, Tsung-Ying; Ruyle, William V.; Walford, Gordon L.; and Witzel, Bruce E., 3,703,582.

Meriz, Miquel Casas. Adjustable support beam. 3,703,269, Cl. 248-354.001.

Merkle, Alfred; Schlicker, Volker; and Wrobel, Gunter, to Papst-Motoren KG. Lubrication device for rotation machine parts. 3,703,221, Cl. 184-6.270.

Merlin Gerin, Societe Anonyme: *See—*

Henry, Jean-Claude, 3,703,619.

Merrill, Stewart H., to Eastman Kodak Company. Photoconductive elements containing polymeric binders. 3,703,371, Cl. 96-1.600.

Merrill, Stewart H., to Eastman Kodak Company. Photoconductive elements containing polymeric binders. 3,703,372, Cl. 96-1.600.

Messerschmidt, Friedrich, to Bosch, Robert, G.m.b.H. Sealing means for fuel injection valves. 3,703,184, Cl. 137-509.000.

Messerschmitt-Bolkow-Blohm GmbH: *See—*

Lincks, Hans; and Weigmann, Erich W., 3,703,266.

Metallgesellschaft Aktiengesellschaft: *See—*

Rammler, Roland; and Schmalfeld, Paul, 3,703,442.

Meyer, Roger Paul: *See—*

Gomersall, Earl Raymond; Meyer, Roger Paul; and Rejmaniak, Susan English, 3,703,725.

Microdyne Corporation: *See—*

McAtee, Jon R., 3,703,689.

Microsystems International Limited: *See—*

Cowpland, Michael C. J., 3,703,647.

Middleton, Edward B. Closure having geared rotatable ball valve. 3,703,250, Cl. 222-507.000.

Middleton, Edward Benjamin. Rotatable opening container closure. 3,703,249, Cl. 222-597.000.

Midwest Steel Fabricators, Inc.: *See—*

Davis, David E., 3,703,274.

Mikhailov, Vadim Vladimirovich: *See—*

Ilinsky, Nikolai Fedotovich; Gutterman, Kirill Davidovich; and Mikhailov, Vadim Vladimirovich, 3,703,643.

Miller, Donald E.: *See—*

Habeck, Bruce W.; and Miller, Donald E., 3,703,586.

Miller, Raymond R.: *See—*

Williams, Ray J.; and Miller, Raymond R., 3,703,210.

Milles, Aloys: *See—*

Holler, Hans; Breidenbach, Josef; and Milles, Aloys, 3,703,590.

Milton, Thomas J.; and Skelley, John W., to General Motors Corporation. Collapsible shift tube assembly. 3,703,105, Cl. 74-492.000.

Mimlitch, Kenneth H. Self-centering marking device. 3,703,142, Cl. 101-382.0mv.

Minmmi, Shunsuke: *See—*

Takayama, Yuzi; Ichimura, Yutaka; Minmmi, Shunsuke; Aoyagi, Takanobu; and Takeda, Fumio, 3,703,491.

Minnesota Mining and Manufacturing Company: *See—*

Dustin, Daniel S., 3,703,362.

Schaaf, Ronald L., 3,703,434.

Minolta Camera Kabushiki Kaisha: *See—*

Tanaka, Susumu; and Wada, Ken-Ichi, 3,703,399.

Mitofe, Stephan P.; and Will, Fritz G., to General Electric Company. Primary sodium-water battery. 3,703,415, Cl. 136-83.00r.

Miton, Pierre: *See—*

Laforest, Jean; and Miton, Pierre, 3,703,466.

Mitsubishi Denki Kabushiki Kaisha: *See—*

Noda, Masahiro, 3,703,652.

Mitsubishi Petrochemical Co., Ltd.: *See—*

Nakano, Mamoru; Kadowaki, Koju; Komurao, Isao; Koshikawa, Takeo; and Oshida, Bunzi, 3,703,550.

Simopoulos, Nicholas T.; and Tsui, James B. Y., 3,703,685.

Laforest, Jean; and Miton, Pierre, to Rhone-Poulenc S.A. Dialysers and spacer frames therefor. 3,703,466, Cl. 210-321.000.

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L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitatim des Procedes Georges Claude: *See—*

Bosquain, Maurice; Bourjot, Marcel; and Kirsch, Maurice, 3,703,028.

Lamanche, Jean; and Buisson, Gerard, to Compagnie de Saint-Gobain. Apparatus for manufacturing products composed of fibers agglomerated with synthetic resins. 3,703,396, Cl. 117-21.000.

Lamm, Heinz, to Daimler-Benz Aktiengesellschaft. Rotary piston internal combustion engine. 3,703,163, Cl. 123-8.090.

Lamneck, Karlheinz: *See—*

Kulick, Bruno; and Lamneck, Karlheinz, 3,703,217.

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Langhans, Roy Kenneth, to ICI America Inc. Baking process using polyoxyethylene fatty ethers as softeners and conditioners. 3,703,380, Cl. 99-91.000.

Langhoff, Boris, to Krauss & Reichert Spezialmachinenfabrik. Knife grinding device for a motor-driven cutting tool. 3,703,056, Cl. 51-246.000.

Langston, Benny: *See—*

Salmon, David; Wierzbicki, Edward J.; Langston, Benny; and Beegle, Donald W., 3,703,340.

Lansing Bagnall Limited: *See—*

Kulick, Bruno; and Lamneck, Karlheinz, 3,703,217.

Lapidus, Milton: *See—*

Album, Harvey E.; Clark, Donald E.; Grant, Norman H.; and Lapidus, Milton, 3,703,542.

Album, Harvey E.; Clark, Donald E.; Grant, Norman H.; and Lapidus, Milton, 3,703,543.

Lareau, Norman N., to Eastman Kodak Company. X-ray film cassette with identification exposure window and exposure indicator. 3,703,272, Cl. 250-67.000.

Larsen, Helge: *See—*

Palyi, Leslie; and Larsen, Helge, 3,703,200.

Larson, William M.; and Jackson, William E., to Goodyear Tire & Rubber Company, The. Method of making polyester laminates. 3,703,426, Cl. 156-308.000.

Lasco, Ralph H., to Diamond Shamrock Corporation. Sequestering agents for metal ion contamination of alkyl-aromatic hydrocarbons. 3,703,473, Cl. 252-188.300.

Laun, Charles L., III, to Goodyear Tire & Rubber Company, The. Vehicle wheel and brake with heat shield. 3,703,317, Cl. 301-6.00r.

Lauro, Luciano: *See—*

Pomella, Piero; and Lauro, Luciano, 3,703,327.

Laverda, Pietro, to Pietro Laverda S.p.A. Device for automatic self-levelling of the body of a threshing-harvesting machine. 3,703,298, Cl. 280-6.00h.

Lawrence Manufacturing Company: *See—*

Hamilton, William H.; and Winsor, Jack O., 3,703,314.

Leach, George J., to Chartered Enterprises, mesne. Binder for water skis. 3,703,013, Cl. 9-310.0aa.

Leaper, Joseph Michael Faraday; and Raman, Harvey Peter John, to Amchem Products, Inc. Preparation of 3-amino-2,5-dichlorobenzoic acid. 3,703,546, Cl. 260-518.00a.

Learning Appliances Limited: *See—*

Rubenstein, Leonard, 3,703,608.

Lechner, Walter Ludwig: *See—*

Masson, Narinder; Korenicki, William John; and Lechner, Walter Ludwig, 3,703,098.

Lee, Alex Y.: *See—*

Gershberg, David N.; and Lee, Alex Y., 3,703,722.

Lee, Richard J.: *See—*

Piasek, Edmund J.; Karll, Robert E.; and Lee, Richard J., 3,703,536.

Lemler, Seymour A. Scoop for animal waste. 3,703,158, Cl. 119-1.000.

Leningradskoe Proektno-Experimetalnoe Otdelenie Vsesojuz-Nogo Gosudarstvennogo Nauchno Issledovatelskogo i Proekt-Nogo Instituta Vniiproektelektromontash, Dnepropetrovskaya ulitsa: *See—*

Povolotsky, Aron Markovich; Sushkin, Vyacheslav Petrovich; Fateichev, Anatoly Semenovich; and Gavrilov, Nikolai Vasilievich, 3,703,025.

Lerich, Lester. Expansion bolt. 3,703,119, Cl. 85-67.000.

Les-Kare, Inc.: *See—*

Glass, Neel W., 3,703,209.

Lever Brothers Company: *See—*

Martin, Donald J., 3,703,583.

Levesoue, Norman R.; and Harper, Donald E., to Circuit-Stik, Inc. Rub-on sub-element for electronic circuit board. 3,703,603, Cl. 174-68.500.

Levine, Charles A., to Dow Chemical Company, The. Process for generating electrical energy comprising melting the anode metal in the reservoir prior to melting the anode metal in the electrolyte fibers. 3,703,412, Cl. 136-6.000.

Levine, Ralph, to Cities Service Company. Process for preparing a pure hydrogenated cycloolefin. 3,703,558, Cl. 260-666.00p.

Levinn, Robert N., to American Thermostat Corporation. Liquid level sensing system. 3,703,693, Cl. 337-1.000.

Levy, Leon B., to Celanese Corporation. Process for the conversion of olefins to unsaturated aldehydes and acids. 3,703,551, Cl. 260-533.000.

Lewis, Fred I. Vehicle seat belt non-use warning signal switch mounting. 3,703,618, Cl. 250-85.00r.

Leyland Gas Turbines Limited: *See—*

Barnard, Mark Cary Sedgwick, 3,703,206.

Liebert, Oskar; and Theilacker, Klaus, to Maschinenfabrik Augsburg-Nurnberg AG. Sheet feeding apparatus having gripper control, for use with printing machines. 3,703,281, Cl. 271-79.000.

Lietz, Ernst, G.m.b.H.: *See—*

Bromer, Heinz; and Meinert, Norbert, 3,703,389.

Lin, Chao-Han; and Wright, Arthur J., to National Cash Register Company, The. Mark-forming record materials and process for their use. 3,703,397, Cl. 117-36.200.

Lincks, Hans; and Weigmann, Erich W., to Messerschmitt-Bolkow-Blohm GmbH. Control unit for the lift engines of vertical and short takeoff aircraft. 3,703,266, Cl. 244-52.000.

Lindemann, Martin K. Fusible thermosetting powder resin and production thereof. 3,703,499, Cl. 260-77.5at.

Linden, Henry R., to Institute of Gas Technology. Process for production of pipeline quality gas from oil shale. 3,703,052, Cl. 48-215.000.

Lipowski, Stanley A.; and Queen, John C., Jr., to Diamond Shamrock Corporation. Polyacrylamide-epoxidized aminoplast-urea condensates. 3,703,563, Cl. 260-836.000.

List, Hans: *See—*

Schreiber, Erich; Freyn, Fritz; and Noraberg, John, 3,703,178.

Little, William S., Jr.; and Townsend, Robert H., to Xerox Corporation. Liquid applicator. 3,703,459, Cl. 204-300.

Lock, Michael V., to Deering Milliken Research Corporation. Two step modification of textile materials. 3,703,351, Cl. 8-116.300.

Locke, John Michael: *See—*

Duck, Edward William; Locke, John Michael; and Amass, Allan John, 3,703,566.

Loewe Opta G.m.b.H.: *See—*

Dennewitz, Rolf Dieter; and Breitkreuz, Lutz, 3,703,662.

London, Arnold, to Motorola, Inc. Photocurrent cross talk isolation. 3,703,669, Cl. 317-235.000.

Long, Thomas F.: *See—*

Beyer, Henry R.; Long, Thomas F.; and De Sipio, Richard G., 3,703,719.

Longin, Mikail Lvovich: *See—*

Dovgalev, Stepan Ilich; Ermolenko, Igor Nikolaevich; Buglov, Evgeny Danilovich; Danilov, Ivan Petrovich; and Longin, Mikail Lvovich, 3,703,438.

Longwell, John P., to Esso Research and Engineering Company. Hybrid rocket propellant using polymeric sponge and liquid oxidizer. 3,703,080, Cl. 60-219.000.

Losee, Walter J., to Atlas Engineering Products, Inc. Construction element with anchor teeth. 3,703,304, Cl. 287-20.921.

Love, J. E., Company: *See—*

Gradwohl, Donald R.; and Neal, Archie E., 3,703,060.

Lowenthal, Serge: *See—*

Broussaud, Georges; and Lowenthal, Serge, 3,703,640.

Luebs, Donald F.; and Ashby, Frederick R., to Champion International Corporation. Apparatus for making textured panels. 3,703,198, Cl. 144-2.00r.

Lugiewicz, Robert C., to Cubb-Pac Corporation. Packaging of meat. 3,703,064, Cl. 53-122.000.

Lugo, Luigi; Gualdi, Girogio; and Reni, Cesare, to Societa' Italiana Resine S.p.A. Method of preparing phthalic acids. 3,703,547, Cl. 260-524.00r.

Lugscheider, Walter, to Siemens Aktiengesellschaft. Method of coating niobium with copper. 3,703,447, Cl. 204-37.00r.

Lukens Steel Company: *See—*

Scott, William W., Jr., 3,703,600.

Lummus, James L.; and Field, Leroy J., to Pan American Petroleum Corporation. Vertical separator for drilling fluids. 3,703,467, Cl. 210-522.000.

Lunel, Jean: *See—*

Florent, Jean; Lunel, Jean; and Renaut, Jacques, 3,703,439.

Lusti, John; and Doane, John Charles, to Otis Elevator Company. Solid state control system. 3,703,222, Cl. 187-29.00r.

Lutz, Warren R. Basketball apparatus including a past stabilizing slot. 3,703,291, Cl. 273-85.00r.

Lystad, Leonard A., to General Motors Corporation. Dual configuration vehicle body. 3,703,310, Cl. 296-15.000.

Macleod, David E., to Carrier Corporation. Self-contained air conditioning unit. 3,703,087, Cl. 62-262.000.

Madatron Corporation: *See—*

Hanbicki, Richard B., 3,703,629.

Maeda, Kazuo, to Mitsui Shipbuilding and Engineering Co., Ltd. Method for building ships. 3,703,153, Cl. 114-77.00r.

Maekawa, Sadafumi: *See—*

Kishikawa, Zitsuichi; and Maekawa, Sadafumi, 3,703,599.

Magnatex Limited: *See—*

Tomlin, Robert Derrick, 3,703,270.

Maher, Pat. Tank heater. 3,703,167, Cl. 126-350.00r.

Maida, Osamu, to Nippon Kogaku. Timer for a camera. 3,703,649, Cl. 307-293.000.

Maierson, Theodore; Roe, Harry L., Jr.; and Williams, James E., to National Cash Register Company, The. Pre-fluxed solder powder. 3,703,254, Cl. 228-56.000.

Maiocchi, Luigi, to Industrie Pirelli S.p.A. Tread ring for removable tread tires. 3,703,202, Cl. 152-175.000.

Maksymiak, John; and Hart, Lawrence M., to Xerox Corporation. Method and apparatus for forming a uniform layer of powder developer on a surface. 3,703,157, Cl. 118-637.000.

Malkemus, John D.; and Bell, John B., to Jefferson Chemical Company, Inc. Production of anhydrous β-hydroxyalkyl carbamates. 3,703,538, Cl. 260-482.00c.

Mallinckrodt Chemical Works: *See—*

Baron, Frank A., 3,703,598.

Mallory, James D.: *See—*

Heaton, Richard A.; and Mallory, James D., 3,703,363.

Malmstrom, Sven Erik, to Forsheda Gummifabrik AB. Sealing between a rotary and a stationary member. 3,703,296, Cl. 277-25.000.

Mama, Hiromichi: *See—*

Kiyomiya, Hiromoto; Fukumiya, Yukio; Aoki, Mithuzi; and Mama, Hiromichi, 3,703,611.

Manganaro, James L.: *See—*

Carson, William N., Jr.; and Manganaro, James L., 3,703,358.

Mannheimer, Hans S. Diamido amino sulfonates and methods for preparing same. 3,703,535, Cl. 260-401.000.

Marion, Thomas E.; and Priborsky, Godfrey M., to Maryland Cup Corporation. Apparatus for feeding heat shrinkable plastic film and capping containers therewith. 3,703,066, Cl. 53-296.000.

Marki, Gustav Paul: *See—*

Ebbe, Grace Lakin; and Marki, Gustav Paul, 3,703,610.

Marradi, Renato. Automatic tray-loading device for cigarette packaging machines. 3,703,242, Cl. 214-302.000.

Marshall, Claude J., to North American Rockwell Corporation. Retaining means for wheel trim members. 3,703,318, Cl. 301-37.00r.

Martin, Clyde J., to Martin Industries, Inc. Gauge actuated circuit control unit. 3,703,616, Cl. 200-56.00r.

Martin, Donald J., to Lever Brothers Company. Anticalculus formulations. 3,703,583, Cl. 424-54.000.

Martin Industries, Inc.: *See—*

Martin, Clyde J., 3,703,616.

Martinez, Miguel: *See—*

Holcomb, Harry F.; and Martinez, Miguel, 3,703,095.

Marum, Edward C.: *See—*

Niesen, George P.; and Marum, Edward C., 3,703,156.

Marx, Matthias; Becker, Ernst; and Spoor, Herbert, to Badische Anilin-& Soda-Fabrik Aktiengesellschaft. Coating compositions for electrodeposition. 3,703,596, Cl. 260-29.6ta.

Maryland Cup Corporation: *See—*

Marion, Thomas E.; and Priborsky, Godfrey M., 3,703,066.

Maschinenfabrik Augsburg-Nurnberg AG: *See—*

Liebert, Oskar; and Theilacker, Klaus, 3,703,281.

Massachusetts Institute of Technology: *See—*

Nugent, John B., 3,703,084.

Massey-Ferguson Industries Limited: *See—*

Schnarr, Howard A., 3,703,325.

Masson, Narinder; Korenicki, William John; and Lechner, Walter Ludwig. Compound fluid meter. 3,703,098, Cl. 73-231.00r.

Mast, Phillip W.; and Beaubien, Laurent A., to United States of America, Navy. Close packing of uniform size spheres. 3,703,012, Cl. 9-8.000.

Masuda, Shiro; Ohkubo, Takashi; and Furukawa, Yu, to Denki Kagaku Kogyo Kabushiki Kaisha. Process for the preparation of aqueous emulsions of water-resistance vinyl acetate-ethylene copolymers. 3,703,492, Cl. 260-27.0ev.

Matsue, Shigeki, to Nippon Electric Company, Ltd. High speed associative memory circuits. 3,703,709, Cl. 340-173.0ff.

Matsumoto, Seiji: *See—*

Tamai, Yasuo; Sato, Masamichi; Matsumoto, Seiji; and Honjo, Satoru, 3,703,400.

Matsushita Electric Industrial Co., Ltd.: *See—*

Higashida, Yutaka; and Imanishi, Kaoru, 3,703,612.

Nakamura, Shigeaki; Nakamura, Tadao; and Kohashi, Tadao, 3,703,594.

Nomura, Fumio; Takamiya, Yutaka; Mizuno, Sakuhiro; Higashi, Kunio; and Shimamoto, Toshihiro, 3,703,698.

Ogata, Nobutaka; Kumamoto, Riyouzi; and Asada, Shuzi, 3,703,043.

Yamamoto, Kozo; and Takamiya, Takehisa, 3,703,295.

Matthews, Merton Louis, to Maxson Automatic Machinery Company. Rotary paper-cutter knife structure. 3,703,117, Cl. 83-677.000.

Maxson Automatic Machinery Company: *See—*

Matthews, Merton Louis, 3,703,117.

Maydan, Dan, to Bell Telephone Laboratories, Incorporated. Intracavity modulator. 3,703,687, Cl. 331-94.500.

Mc Corkle, John E.: *See—*

Coglianese, Fred A.; and Mc Corkle, John E., 3,703,482.

Mc Voy, David S., to Coaxial Scientific Corporation. Channel monitoring system for audience survey purposes. 3,703,684, Cl. 325-31.000.

McAtee, Jon R., to Microdyne Corporation. Microwave varactor-tuned resonator for preselector. 3,703,689, Cl. 333-82.00b.

McCartney, Roger L., to Celanese Coatings Company. Vinylnorbornene/maleic anhydride copolymers and process of preparing same. 3,703,501, Cl. 260-78.50r.

McCaw, Thomas M. Differential. 3,703,108, Cl. 74-713.000.

McCrary, Avis L., to Dow Chemical Company, The. Polyalkylenepolyamines with N-(2-hydroxy-3-sulfopropyl) groups. 3,703,545, Cl. 260-513.00n.

McDonald, Hugh G.: *See—*

Vitter, Albert L., Jr.; and McDonald, Hugh G., 3,703,096.

McDonnell Douglas Corporation. *See—*

Arrance, Frank C., 3,703,413.

Rosa, Albert G.; and Birrer, George W., 3,703,417.

Smatkr, Joseph S., 3,703,414.

McEnery, John, to Molins Machine Company Limited. Cigarette testing apparatus. 3,703,235, Cl. 209-79.000.

McGrath, Charles E.: *See—*

Smith, William; and McGrath, Charles E., 3,703,124.

McInnes, Alexander G. P., to International Research & Development Corporation. Vehicle secondary braking system with continuous belt. 3,703,223, Cl. 188-5.000.

McKinney, John S., to American Metal Climax, Inc. Sheet metal roofing/siding system with seperable fastener. 3,703,062, Cl. 52-545.000.

McNally, Byron L. Flood alarm. 3,703,715, Cl. 340-240.000.

McNeil Laboratories, Inc.: *See—*

Plostnieks, Janis, 3,703,522.

Meadows, Paul L.: *See—*

Delmonte, John; Meadows, Paul L.; and Benavides, Augusto E., 3,703,425.

Medidyne Corporation: *See—*

Smith, Gordon E., 3,703,174.

Meguro, Kanji: *See—*

Tawada, Hiroyuki; Meguro, Kanji; and Kuwada, Yutaka, 3,703,525.

Meinert, Norbert: *See—*

Bromer, Heinz; and Meinert, Norbert, 3,703,389.

Melezoglu, Cevdet, to Corning Glass Works. Method of making a magnetic recording medium. 3,703,411, Cl. 117-237.000.

Menne, Eugene P., to Johnson Diversified, Inc. Push botton lock for fishing reels. 3,703,262, Cl. 242-84.20a.

Merck & Co., Inc.: *See—*

Shen, Tsung-Ying; Ruyle, William V.; Walford, Gordon L.; and Witzel, Bruce E., 3,703,582.

Meriz, Miquel Casas. Adjustable support beam. 3,703,269, Cl. 248-354.001.

Merkle, Alfred; Schlicker, Volker; and Wrobel, Gunter, to Papst-Motoren KG. Lubrication device for rotation machine parts. 3,703,221, Cl. 184-6.270.

Merlin Gerin, Societe Anonyme: *See—*

Henry, Jean-Claude, 3,703,619.

Merrill, Stewart H., to Eastman Kodak Company. Photoconductive elements containing polymeric binders. 3,703,371, Cl. 96-1.600.

Merrill, Stewart H., to Eastman Kodak Company. Photoconductive elements containing polymeric binders. 3,703,372, Cl. 96-1.600.

Messerschmidt, Friedrich, to Bosch, Robert, G.m.b.H. Sealing means for fuel injection valves. 3,703,184, Cl. 137-509.000.

Messerschmitt-Bolkow-Blohm GmbH: *See—*

Lincks, Hans; and Weigmann, Erich W., 3,703,266.

Metallgesellschaft Aktiengesellschaft: *See—*

Rammler, Roland; and Schmalfeld, Paul, 3,703,442.

Meyer, Roger Paul: *See—*

Gomersall, Earl Raymond; Meyer, Roger Paul; and Rejmaniak, Susan English, 3,703,725.

Microdyne Corporation: *See—*

McAtee, Jon R., 3,703,689.

Microsystems International Limited: *See—*

Cowpland, Michael C. J., 3,703,647.

Middleton, Edward B. Closure having geared rotatable ball valve. 3,703,250, Cl. 222-507.000.

Middleton, Edward Benjamin. Rotatable opening container closure. 3,703,249, Cl. 222-597.000.

Midwest Steel Fabricators, Inc.: *See—*

Davis, David E., 3,703,274.

Mikhailov, Vadim Vladimirovich: *See—*

Ilinsky, Nikolai Fedotovich; Gutterman, Kirill Davidovich; and Mikhailov, Vadim Vladimirovich, 3,703,643.

Miller, Donald E.: *See—*

Habeck, Bruce W.; and Miller, Donald E., 3,703,586.

Miller, Raymond R.: *See—*

Williams, Ray J.; and Miller, Raymond R., 3,703,210.

Milles, Aloys: *See—*

Holler, Hans; Breidenbach, Josef; and Milles, Aloys, 3,703,590.

Milton, Thomas J.; and Skelley, John W., to General Motors Corporation. Collapsible shift tube assembly. 3,703,105, Cl. 74-492.000.

Mimlitch, Kenneth H. Self-centering marking device. 3,703,142, Cl. 101-382.0mv.

Minmmi, Shunsuke: *See—*

Takayama, Yuzi; Ichimura, Yutaka; Minmmi, Shunsuke; Aoyagi, Takanobu; and Takeda, Fumio, 3,703,491.

Minnesota Mining and Manufacturing Company: *See—*

Dustin, Daniel S., 3,703,362.

Schaaf, Ronald L., 3,703,434.

Minolta Camera Kabushiki Kaisha: *See—*

Tanaka, Susumu; and Wada, Ken-Ichi, 3,703,399.

Mitofe, Stephan P.; and Will, Fritz G., to General Electric Company. Primary sodium-water battery. 3,703,415, Cl. 136-83.00r.

Miton, Pierre: *See—*

Laforest, Jean; and Miton, Pierre, 3,703,466.

Mitsubishi Denki Kabushiki Kaisha: *See—*

Noda, Masahiro, 3,703,652.

Mitsubishi Petrochemical Co., Ltd.: *See—*

Nakano, Mamoru; Kadowaki, Koju; Komurao, Isao; Koshikawa, Takeo; and Oshida, Bunzi, 3,703,550.

Mitsui Shipbuilding and Engineering Co., Ltd.: *See—*
Maeda, Kazuo, 3,703,153.
Miyasaka, Tooru: *See—*
Goshima, Takeshi; and Miyasaka, Tooru, 3,703,129.
Mizote, Masanori: *See—*
Irie, Namio; and Mizote, Masanori, 3,703,109.
Mizuno, Sakuhiro: *See—*
Nomura, Fumio; Takamiya, Yutaka; Mizuno, Sakuhiro; Higashi, Kunio; and Shimamoto, Toshihiro, 3,703,698.
Mobil Oil Corporation: *See—*
Horodysky, Andrew G., 3,703,504.
Horodysky, Andrew G.; and Jaggers, William, 3,703,505.
Moeller, Axel, to Moeller Mfg., Co., Inc. Marine bailer. 3,703,150, Cl. 114-197.000.
Moeller Mfg., Co., Inc.: *See—*
Moeller, Axel, 3,703,150.
Mogi, Toshio, to Denki Onkyo Co., Ltd. Snap-action switching apparatus. 3,703,695, Cl. 338-32.00r.
Molins Limited: *See—*
Davies, Robert William, 3,703,103.
Molins Machine Company Limited: *See—*
McEnery, John, 3,703,235.
Monarch Marking System Company, The: *See—*
Gregory, Walter D., 3,703,044.
Monk, John Thomas. Straddle carrier. 3,703,243, Cl. 214-394.000.
Monsanto Company: *See—*
Anderson, George J.; and Dahms, Wilbraham-Ronald, 3,703,494.
Koons, Russell E., 3,703,393.
Montecatini Edison S.p.A.: *See—*
Vecchio, Martino; Carraro, Giorgi; and Cammarata, Italo, 3,703,557.
Montgomery Industries, International, Inc.: *See—*
Montgomery, William T. S., Jr., 3,703,231.
Montgomery, William T. S., Jr., to Montgomery Industries, International, Inc. Material feeding apparatus. 3,703,231, Cl. 198-165.000.
Moore, Robert T.: *See—*
Takahashi, Yoshihiro; Moore, Robert T.; and Stephens, Thomas M., 3,703,355.
Moore, Thomas. Automatic transmission fluid replenishment means and level indicator. 3,703,716, Cl. 340-244.00b.
Moorhead, Glenn E. Container for handling chilled product. 3,703,088, Cl. 62-430.000.
Morehouse, Edward L., to Union Carbide Corporation. Process for producing polyurethane foams. 3,703,489, Cl. 260-2.5ah.
Moretti, John A.: *See—*
Gillund, Arden G.; Holtshouse, Dan K.; Moretti, John A.; and Orlando, Vincent A., 3,703,300.
Morozowich, Walter, to Upjohn Company, The. Process for preparing the tris (hydroxymethyl)-aminomethane salt of PGE. 3,703,544, Cl. 260-501.170.
Morris, Philip, Incorporated: *See—*
Hind, John D.; and Kelley, Matthias F., Jr., 3,703,177.
Morton, Donald E., to Goodyear Tire & Rubber Company, The. Process for reuse of polyester resin. 3,703,488, Cl. 260-2.300.
Morton, Paul S. Distress signaling device. 3,703,152, Cl. 116-28.00r.
Moskovsky Ordena Levina Energetichesky Institut: *See—*
Ilinsky, Nikolai Fedotovich; Gutterman, Kirill Davidovich; and Mikhailov, Vadim Vladimirovich, 3,703,643.
Mosterd, Jacob Hendrib. Automatically discharging gripper device. 3,703,309, Cl. 294-86.00r.
Motoren- und Turbinen-Union Muenchen GmbH: *See—*
Hagemeister, Klaus, 3,703,076.
Motoren- und Turbinen-Union Munchen GmbH: *See—*
Wildner, Walter, 3,703,258.
Motorola, Inc.: *See—*
Gallas, John D.; and Hofmeister, Richard J., 3,703,323.
London, Arnold, 3,703,669.
Motter, Robert Franklin, to Eastman Kodak Company. Process of sensitizing converted-type silver halide emulsions with noble metal salts. 3,703,584, Cl. 96-108.000.
Moyroud, Louis M. Photocomposing machine. 3,703,138, Cl. 95-4.50r.
Muller, Erwin, to Farbenfabriken Bayer Aktiengesellschaft. Preparation of O-acyl-N-methylol-amide. 3,703,540, Cl. 260-490.000.
Murakami, Tadao; Kikuchi, Ken; Tomozaki, Riyouzou; and Ohuchi, Yasushi, to Hitachi, Ltd. Electromagnetic clutch. 3,703,227, Cl. 192-84.00c.
Murphy, G. W., Industries, Inc.: *See—*
Jacyno, Anthony, 3,703,646.
Musyt, William; and Tremelin, James D. Flexible fabric container and method of making same. 3,703,201, Cl. 150-.500.
N. V. Chemische Fabriek v/h Dr. A. Haagen: *See—*
Van Den Berg, Andre S., 3,703,574.
Naeve, Lester H. Conduit cleaning apparatus. 3,703,015, Cl. 15-104.3sn.
Nagae, Yasuyuki; and Yamashita, Nobuyuki. Automatic glass ribbon cutting process and apparatus. 3,703,115, Cl. 83-12.000.
Nagashiro, Waichi: *See—*
Okabe, Tadao; Oikawa, Mitsuru; Tanaka, Makoto; and Nagashiro, Waichi, 3,703,374.
Nagata, Minoru: *See—*
Kubo, Masaharu; Hori, Ryoichi; and Nagata, Minoru, 3,703,710.
Nagatsu, Junsaku: *See—*
Suzsuki, Saburo; Isono, Kiyoshi; and Nagatsu, Junsaku, 3,703,506.
Nakai, Kaichi: *See—*
Keshi, Akizo; Yoshii, Kunio; Yokoo, Makoto; and Nakai, Kaichi, 3,703,484.
Nakamura, Masaru: *See—*
Sato, Katsumi; Nakamura, Takashi; Nakamura, Masaru; Hirasawa, Kazuo; Hamada, Mitsuo; Takahashi, Kenzi; Yashima, Masaaki; Ozaki, Toshiaki; Yamamoto, Sigeo; Ooishi, Tadashi; Fujinami, Akira; Horiuchi, Fukashi; and Nodera, Katsuji, 3,703,526.
Nakamura, Shigeaki; Nakamura, Tadao; and Kohashi, Tadao, to Matsushita Electric Industrial Co., Ltd. Method for manufacturing a photoconductive powder. 3,703,594, Cl. 252-501.000.
Nakamura, Tadao: *See—*
Nakamura, Shigeaki; Nakamura, Tadao; and Kohashi, Tadao, 3,703,594.
Nakamura, Takashi: *See—*
Sato, Katsumi; Nakamura, Takashi; Nakamura, Masaru; Hirasawa, Kazuo; Hamada, Mitsuo; Takahashi, Kenzi; Yashima, Masaaki; Ozaki, Toshiaki; Yamamoto, Sigeo; Ooishi, Tadashi; Fujinami, Akira; Horiuchi, Fukashi; and Nodera, Katsuji, 3,703,526.
Nakanishi, Kazuo; and Takei, Shuzo, to Sankyo Company Limited. Diagnostic reagents for the determination of γ-glutamyl transpeptidase in human serum. 3,703,441, Cl. 195-99.000.
Nakano, Mamoru; Kadowaki, Koju; Komurao, Isao; Koshikawa, Takeo; and Oshida, Bunzi, to Mitsubishi Petrochemical Co., Ltd. Process for preparing unsaturated aldehydes and unsaturated carboxylic acids. 3,703,550, Cl. 260-533.00n.
Nakase, Yoshiaki; Yoshida, Masaru; Ito, Akihiko; Iwai, Tadashi; Hayashi, Koichiro; Okamura, Seizo; and Kojima, Katsumi, to Japan Atomic Energy Research Institute. Polymerization of tetraoxane in the presence of sulfur and sulfur compounds. 3,703,454, Cl. 24-159.210.
Naniwa Sangyo Co., Ltd.: *See—*
Nijo, Kiyoichi, 3,703,086.
Naomloze Venootschap Spiro Research N.V.: *See—*
Roffelsen, Franciscus, 3,703,253.
Nast, Roland; Kuhle, Engelbert; and Abele, Manfred, to Farbenfabriken Bayer Aktiengesellschaft. Vulcanization retarders of trihalo-sulphenyl-sulfonamides. 3,703,500, Cl. 260-79.50b.
National Cash Register Company, The: *See—*
Huber, Hans F., 3,703,474.
Huber, Hans F., 3,703,774.
Lin, Chao-Han; and Wright, Arthur J., 3,703,397.
Maierson, Theodore; Roe, Harry L., Jr.; and Williams, James E., 3,703,254.
National Research Development Corporation: *See—*
Bird, Brian Michael; and Rawcliffe, Gordon Hindle, 3,703,672.
Neal, Archie E.: *See—*
Gradwohl, Donald R.; and Neal, Archie E., 3,703,060.
Neier, Wilhelm: *See—*
Cherubim, Martin; Giehring, Horst; and Neier, Wilhelm, 3,703,531.
Nekton, Armas H. Game board with recording means. 3,703,293, Cl. 273-136.00c.
Nelden, Richard M.; and Ryan, Thomas J., to American Standard Inc. Rapid response fluid drive. 3,703,078, Cl. 60-54.000.
Neugroschel, Eric; and Paterson, Alexander Scott, to Hoffmann-La Roche Inc. Analyzer processing and recording technique. 3,703,337, Cl. 356-178.000.
Newmark, Harold Leon, to Hoffmann-La Roche Inc. Antibacterial medicinal compositions. 3,703,580, Cl. 424-181.000.
Nicholas, James P.: *See—*
Seiler, Lazar I.; and Nicholas, James P., 3,703,018.
Nicholas, Merle E., to Honeywell Inc. Relative humidity sensor. 3,703,697, Cl. 338-35.000.
Nichols, Joseph. Medicated gelled oils. 3,703,577, Cl. 424-45.000.
Niedrach, Leonard W.; and Stoddard, William H., Jr., to General Electric Company. Sensor with anion exchange resin electrolyte. 3,703,457, Cl. 204-195.00p.
Niesen, George P.; and Marum, Edward C., to Dick, A. B., Company. Apparatus for applying a conversion liquid to electrostatic copy material. 3,703,156, Cl. 118-117.000.
Niethammer, Woodard A.: *See—*
Kilpatrich, Stanley A.; and Niethammer, Woodard A., 3,703,097.
Nihon Nohyku Kabushiki Kaisha: *See—*
Kishikawa, Zitsuichi; and Maekawa, Sadafumi, 3,703,599.
Nijo, Kiyoichi, to Naniwa Sangyo Co., Ltd. Temperature-regulating system in apparatuses for maintaining temperature constant. 3,703,086, Cl. 62-209.000.
Nippon Electric Company, Ltd.: *See—*
Matsue, Shigeki, 3,703,709.
Nippon Kogaku: *See—*
Maida, Osamu, 3,703,649.
Nippon Kogaku K.K.: *See—*
Watanabe, Asao, 3,703,130.
Nippon Kokan Kabushiki Kaisha: *See—*
Yamagishi, Hidehisa; Yokoi, Fumitoshi; and Kutino, Tsuyoshi, 3,703,407.
Niquet, Samuel. Drill sharpening device. 3,703,055, Cl. 51-219.000.
Nishishita, Masaharu: *See—*
Ohnishi, Shigekazu; Nishishita, Masaharu; and Takimoto, Hisateru, 3,703,403.
Nissan Motor Company, Limited: *See—*
Irie, Namio; and Mizote, Masanori, 3,703,109.
Nisson Motor Company, Limited: *See—*
Aono, Shigeo, 3,703,162.
Nitto Chemical Industry Co.: *See—*

Takayama, Yuzi; Ichimura, Yutaka; Minmmi, Shunsuke; Aoyagi, Takanobu; and Takeda, Fumio, 3,703,491.
Noda, Masahiro, to Mitsubishi Denki Kabushiki Kaisha. Electroacoustic transducer. 3,703,652, Cl. 310-8.300.
Nodera, Katsuji: *See—*
Sato, Katsumi; Nakamura, Takashi; Nakamura, Masaru; Hirasawa, Kazuo; Hamada, Mitsuo; Takahashi, Kenzi; Yashima, Masaaki; Ozaki, Toshiaki; Yamamoto, Sigeo; Ooishi, Tadashi; Fujinami, Akira; Horiuchi, Fukashi; and Nodera, Katsuji, 3,703,526.
Nomura, Fumio; Takamiya, Yutaka; Mizuno, Sakuhiro; Higashi, Kunio; and Shimamoto, Toshihiro, to Matsushita Electric Industrial Co., Ltd. Controller for sewing machine. 3,703,698, Cl. 338-108.000.
Noraberg, John: *See—*
Schreiber, Erich; Freyn, Fritz; and Noraberg, John, 3,703,178.
Norio Saito: *See—*
Saito, Norio; and Kimura, Hiroshiro, 3,703,588.
North American Rockwell Corporation: *See—*
Marshall, Claude J., 3,703,318.
Rosen, Fred D., 3,703,641.
Yoshino, Stanley Y., 3,703,422.
Norton Company: *See—*
Bratt, Richard L., 3,703,019.
Nubla, Jesse L. Smoke filtering device. 3,703,179, Cl. 131-173.000.
Nugent, John B., to Massachusetts Institute of Technology. Boom system for oil containment. 3,703,084, Cl. 61-1.00f.
Nunnally, Kenneth R.: *See—*
Turley, Robert R.; Castor, William M.; and Nunnally, Kenneth R., 3,703,593.
Nyman, Al, & Son, Inc.: *See—*
Nyman, Morton, 3,703,045.
Nyman, Morton, to Nyman, Al, & Son, Inc. Photo block. 3,703,045, Cl. 40-152.000.
Ocean Design Engineering Corporation: *See—*
Clement, John C., 3,703,151.
O'Connor, Alton J., to Walbro Corporation. Fuel pump bellows construction. 3,703,342, Cl. 417-326.000.
O'Connor, Chadwell. Steam boiler. 3,703,161, Cl. 122-235.00r.
Ogata, Nobutaka; Kumamoto, Riyouzi; and Asada, Shuzi, to Matsushita Electric Industrial Co., Ltd. Steam iron. 3,703,043, Cl. 38-77.830.
Ogura, Mitsuo; and Itoh, Satoshi, to Hitachi, Ltd. Record verification apparatus. 3,703,706, Cl. 340-146.1ba.
Ohkubo, Takashi: *See—*
Masuda, Shiro; Ohkubo, Takashi; and Furukawa, Yu, 3,703,492.
Ohnishi, Shigekazu; Nishishita, Masaharu; and Takimoto, Hisateru, to Kuraray Co., Ltd. Method for manufacturing sheet material exhibiting a highly glossy surface. 3,703,403, Cl. 117-64.00c.
Ohnuma, Kiyoshi: *See—*
Uozumi, Sumio; Sakai, Ichio; and Ohnuma, Kiyoshi, 3,703,110.
Ohuchi, Yasushi: *See—*
Murakami, Tadao; Kikuchi, Ken; Tomozaki, Riyouzou; and Ohuchi, Yasushi, 3,703,227.
Oikawa, Mitsuru: *See—*
Okabe, Tadao; Oikawa, Mitsuru; Tanaka, Makoto; and Nagashiro, Waichi, 3,703,374.
Okabe, Tadao; Oikawa, Mitsuru; Tanaka, Makoto; and Nagashiro, Waichi, to Hitachi, Ltd. Method of manufacturing color picture tube. 3,703,374, Cl. 96-36.100.
Okada, Shigetaka; Tsuyama, Naoto; Kurimoto, Masahi; and Sugimoto, Kaname, to Kayashibara Company. Process for the production of starch syrups that have fructose on their molecular ends. 3,703,440, Cl. 195-31.50r.
Okada, Toshio: *See—*
Sakurada, Ichiro; Okada, Toshio; and Uragami, Motoaki, 3,703,406.
Okamura, Seizo: *See—*
Nakase, Yoshiaki; Yoshida, Masaru; Ito, Akihiko; Iwai, Tadashi; Hayashi, Koichiro; Okamura, Seizo; and Kojima, Katsumi, 3,703,454.
Okudaira, Hiromi: *See—*
Takahashi, Shogo; Yamada, Takayasu; and Okudaira, Hiromi, 3,703,365.
Olin Corporation: *See—*
Boudakian, Max M., 3,703,521.
Olin Mathieson Chemical Corporation: *See—*
Papetti, Stelvio, 3,703,359.
Oliver, Kenneth L., to Sperry Rand Corporation. Control wheel force sensors. 3,703,267, Cl. 244-83.00e.
Olympia, Frederick D.: *See—*
Clishem, Thomas A.; Duerr, Francis r.; and Olympia, Frederick D., 3,703,391.
Olympia Werke AG: *See—*
Glave, Horst Dieter, 3,703,230.
Ono, Hisatake; and Osada, Chiaki, to Fuji Photo Film Co., Ltd. Pressure sensitive copying paper. 3,703,398, Cl. 117-36.200.
Ooishi, Tadashi: *See—*
Sato, Katsumi; Nakamura, Takashi; Nakamura, Masaru; Hirasawa, Kazuo; Hamada, Mitsuo; Takahashi, Kenzi; Yashima, Masaaki; Ozaki, Toshiaki; Yamamoto, Sigeo; Ooishi, Tadashi; Fujinami, Akira; Horiuchi, Fukashi; and Nodera, Katsuji, 3,703,526.
Optical Coating Laboratory: *See—*
Berman, Herbert L., 3,703,718.
Opto/Graphics, Inc.: *See—*
Sugarman, Meyer L.; and Wilkie, Thomas A., 3,703,370.
Orlando, Vincent A.: *See—*
Gillund, Arden G.; Holtshouse, Dan K.; Moretti, John A.; and Orlando, Vincent A., 3,703,300.
Oroszlan, Andrew; and Tesoro, Giuliana C., to Stevens, J. P., & Company, Inc. Unsymmetrical aziridinyl compounds. 3,703,509, Cl. 260-239.00e.
Osada, Chiaki: *See—*
Ono, Hisatake; and Osada, Chiaki, 3,703,398.
Oscar Mayer & Co., Inc.: *See—*
Seiferth, Oscar E.; and Austin, Glenn M., 3,703,384.
Oshida, Bunzi: *See—*
Nakano, Mamoru; Kadowaki, Koju; Komurao, Isao; Koshikawa, Takeo; and Oshida, Bunzi, 3,703,550.
Otis Elevator Company: *See—*
Lusti, John; and Doane, John Charles, 3,703,222.
Otis Engineering Corporation: *See—*
Raulins, George Max, 3,703,193.
Ouchi, Teruo, to Alympus Optical Co., Ltd. Endoscope. 3,703,169, Cl. 128-6.000.
Owens-Illinois, Inc: *See—*
Dietz, Raymond Louis, 3,703,386.
Heaton, Richard A.; and Mallory, James D., 3,703,363.
Oxy Metal Finishing Corporation, mesne: *See—*
Clauss, Richard J.; Tremmel, Robert; and Becking, Donald H., 3,703,448.
Ozaki, Toshiaki: *See—*
Sato, Katsumi; Nakamura, Takashi; Nakamura, Masaru; Hirasawa, Kazuo; Hamada, Mitsuo; Takahashi, Kenzi; Yashima, Masaaki; Ozaki, Toshiaki; Yamamoto, Sigeo; Ooishi, Tadashi; Fujinami, Akira; Horiuchi, Fukashi; and Nodera, Katsuji, 3,703,526.
Pala, Gianfranco: *See—*
Casadio, Silvano; and Pala, Gianfranco, 3,703,528.
Casadio, Silvano; and Pala, Gianfranco, 3,703,534.
Palyi, Leslie; and Larsen, Helge. Treating cereal grains and seeds. 3,703,200, Cl. 146-221.500.
Pan American Petroleum Corporation: *See—*
Jones, Loyd W., 3,703,477.
Lummus, James L.; and Field, Leroy J., 3,703,467.
Papetti, Stelvio, to Olin Mathieson Chemical Corporation. Polymeric amino aluminum borohydride and method of preparing. 3,703,359, Cl. 23-359.000.
Papst-Motoren KG: *See—*
Merkle, Alfred; Schlicker, Volker; and Wrobel, Gunter, 3,703,221.
Parke, Davis & Company: *See—*
Haskell, Theodore H.; and Watson, Donald R., 3,703,507.
Pasichnyk, Paul G. Incinerator hood. 3,703,070, Cl. 55-526.500.
Patel, Arvind M., to International Business Machines Corporation. Multi-channel shift register. 3,703,705, Cl. 340-146.1al.
Paterson, Alexander Scott: *See—*
Neugroschel, Eric; and Paterson, Alexander Scott, 3,703,337.
Patusa Aktiengesellschaft: *See—*
Seaton, William W., 3,703,248.
Patzlaff, Albert W., to Blueberry Equipment, Inc. Raspberry harvester. 3,703,072, Cl. 56-330.000.
Pauliukonis, Richard S. Plastic actuating cylinder. 3,703,125, Cl. 92-85.000.
Paulson, Elmir E.: *See—*
Krebs, James N.; and Paulson, Elmir E., 3,703,081.
Paxhia, Emmanuel A.; and Willett, David A., to Sybron Corporation. Radiation moisture measuring system having thermoelectrically cooled detector. 3,703,639, Cl. 250-83.30h.
Payne, Sumas. Vehicle theft signalling device. 3,703,703, Cl. 340-63.000.
Peine, Hans Georg: *See—*
Falkenstein, Georg; Peine, Hans Georg; Doerfel, Helmut; Raff, Paul; and Schuster, Ludwig, 3,703,595.
Pelz, Diethart: *See—*
Eilhardt, Bernd; and Pelz, Diethart, 3,703,034.
Pence, Roy J., to Regents of the University of California, The. Apparatus for sensitive measurement and recording of physiological activity. 3,703,101, Cl. 73-432.00r.
Peppers, Norman A.: *See—*
Vassiliadis, Arthur; Zweng, Harold C.; Peppers, Norman A.; and Alterton, Lloyd E., 3,703,176.
Perilstein, Warren L., to Ethyl Corporation. Gasoline additive and composition. 3,703,360, Cl. 44-63.000.
Pernoud, Claude, to Regie Nationale des Renault and Automobiles Peugeot. Air vent devices for air conditioning systems. 3,703,141, Cl. 98-121.00r.
Perry, James T., 1/2 to Philip H. Willkie. Pitcher's mound with toe block and reinforcing ribs. 3,703,285, Cl. 273-25.000.
Peschel, Stanley G., to Hipotronics, Inc. Mechanically adjustable high voltage inductive reactor for series resonant testing. 3,703,692, Cl. 336-134.000.
Peterson, George Earl: *See—*
Glass, Alastair Malcolm; and Peterson, George Earl, 3,703,328.
Petrolite Corporation: *See—*
Spanos, Theodore, III; and Godar, Richard L., 3,703,587.
Petry, Ronald G.: *See—*
Edwards, Ralph W.; and Petry, Ronald G., 3,703,017.
Philip H. Willkie: *See—*
Perry, James T., 3,703,285.

Philipson, Herman L., Jr., to Recognition Equipment Incorporated. System for document coding and identification. 3,703,628, Cl. 335-61.11e.

Phillips Petroleum Company: *See*—
Kubicek, Donald H.; and Zuech, Ernest A., 3,703,561.
Zuech, Ernest A., 3,703,555.

Phoenix, Lancelot: *See*—
Ingram, Brian; Harries, David Anthony; and Phoenix, Lancelot, 3,703,319.

Piasek, Edmund J.; Karll, Robert E.; and Lee, Richard J., to Standard Oil Company. Preparation of oil-soluble boron derivatives of complex substituted alkylene polyamine. 3,703,536, Cl. 260-462.00r.

Pierce, Irving L.: *See*—
Schenavar, Harold E.; and Pierce, Irving L., 3,703,047.

Pierson, Howard P.: *See*—
Hester, Robert; and Pierson, Howard P., 3,703,347.

Pietro Laverda S.p.A.: *See*—
Laverda, Pietro, 3,703,298.

Pilbeam, Alan: *See*—
Healy, Thomas Victor; and Pilbeam, Alan, 3,703,451.

Pinnow, Douglas Arthur: *See*—
Anderson, Lawrence K.; Feldman, Martin; and Pinnow, Douglas Arthur, 3,703,137.

Pioneer Electronic Corporation: *See*—
Suzuki, Michio, 3,703,251.

Piret, Jean, to Regie National des Usines Renault and Automobiles Peugeot. Automotive transverse-mounted power units. 3,703,107, Cl. 74-695.000.

Pivar, Stewart, to Rototron Corporation. Apparatus for molding hollow objects from thermoplastic materials. 3,703,348, Cl. 18-26.

Plamondon, Jacques A.: *See*—
White, Michael W., Jr.; and Plamondon, Jacques A., 3,703,166.

Plastetics, Inc.: *See*—
Bellasalma, Gerlad J., 3,703,572.

Plostnieks, Janis, to McNeil Laboratories, Inc. Carbostyril derivatives. 3,703,522, Cl. 260-288.00r.

Plumhans, Paul Jean: *See*—
Deboeur, Francois Fernand; and Plumhans, Paul Jean, 3,703,346.

Pluss, Kurt: *See*—
Richter, Carl; Pluss, Kurt; and Feth, Georg, 3,703,537.

Pohm, Arthur V.; and Zingg, Roy J., to Iowa State University Research Foundation. Variable diameter disc pack with cooperating head. 3,703,713, Cl. 340-174.10c.

Poling, Ezar C.; and Botsford, Charles E., to Eastman Kodak Company. Apparatus for resetting the corner of deep-drawn laminated articles. 3,703,428, Cl. 156-382.000.

Pomella, Piero; and Lauro, Luciano. Control devices. 3,703,327, Cl. 318-571.000.

Porte, Gilbert R. A.: *See*—
Alric, Andre A. L.; Porte, Gilbert R. A.; Glotin, Joseph M. H.; Higounenq, Francis J.; and Boussin, Serge P., 3,703,675.

Post Office, The: *See*—
Ravenscroft, Ivor Albert; and Jackson, Lynden Ashbrooke, 3,703,690.

Povolotsky, Aron Markovich; Sushkin, Vyacheslav Petrovich; Fateichev, Anatoly Semenovich; and Gavrilov, Nikolai Vasilievich, to Leningradskoe Proektno-Experimetalnoe Otdelenie Vsesojuz-Nogo Gosudarstvennogo Nauchno Issledovatelskogo i Proekt-Nogo Instituta Vniiproektelektromontash, Dnepropetrovskaya ulitsa. Method of making a composite steel-aluminium anode rod for electrolysis of aluminium. 3,703,025, Cl. 29-446.000.

PPG Industries, Inc.: *See*—
Tarnopol, Milton S.; and Snyder, Thomas P., 3,703,445.

Prachar, Otakar P., to General Motors Corporation. Multidirectional sensor. 3,703,102, Cl. 73-514.000.

Pravaz, Marcel, to Etudes et Fabrications Aeronautiques. Parachute container and the application of the container to a parachute. 3,703,268, Cl. 244-148.000.

Pressley, Arther Mitchell: *See*—
Goodbar, Reid C.; and Pressley, Arther Mitchell, 3,703,073.

Priborsky, Godfrey M.: *See*—
Marion, Thomas E.; and Priborsky, Godfrey M., 3,703,066.

Prober, Richard: *See*—
Haycock, Ernest W.; and Prober, Richard, 3,703,446.

Procter and Gamble Company, The: *See*—
Goodrich, Calvin C.; and Krummen, Eugene V., 3,703,067.

Queen, John C., Jr.: *See*—
Lipowski, Stanley A.; and Queen, John C., Jr., 3,703,563.

Raff, Paul: *See*—
Falkenstein, Georg; Peine, Hans Georg; Doerfel, Helmut; Raff, Paul; and Schuster, Ludwig, 3,703,595.

Raman, Harvey Peter John: *See*—
Leaper, Joseph Michael Faraday; and Raman, Harvey Peter John, 3,703,546.

Rammler, Roland; and Schmalfeld, Paul, to Metallgesellschaft Aktiengesellschaft. Method for the low-temperature distillation of finely granular bituminous materials which form a pulverulent residue in the process. 3,703,442, Cl. 201-12.000.

Randle, Dee, to Swan Trailers Inc. Trailer hitch. 3,703,301, Cl. 280-438.000.

Randoing, Jean Martial: *See*—
Gohe, Raymond; Randoing, Jean Martial; Gohe, Max; and Evrard, Jean-Claude, 3,703,631.

Rank, John B.: *See*—
Schramm, Lester H.; Rank, John B.; and Salkeld, Melvin R., 3,703,016.

Raphaelian, Leo A.: *See*—
Zakaria, Moneeb; Raphaelian, Leo A.; Taber, David; and Brown, James, Jr., 3,703,471.

Rapid Electric Co., Inc.: *See*—
Viola, Ronald J.; and Keeney, Lawrence V., 3,703,621.

Rasmussen, Tom: *See*—
Arntson, Gary L.; and Rasmussen, Tom, 3,703,106.

Raulins, George Max, to Otis Engineering Corporation. Valves. 3,703,193, Cl. 137-630.000.

Ravenscroft, Ivor Albert; and Jackson, Lynden Ashbrooke, to Post Office, The. Dielectric waveguides. 3,703,690, Cl. 333-95.00s.

Ravimohan, Arakali L.: *See*—
Shair, Fredrick H.; and Ravimohan, Arakali L., 3,703,460.

Rawcliffe, Gordon Hindle: *See*—
Bird, Brian Michael; and Rawcliffe, Gordon Hindle, 3,703,672.

RCA Corporation: *See*—
Castellano, Joseph Anthony, 3,703,329.
Deal, Samuel Broughton; and Bartch, Donald Walter, 3,703,401.
Dingwall, Andrew Gordon Francis, 3,703,667.
Goldmacher, Joel E.; and Heilmeier, George H., 3,703,331.
Taylor, George William, 3,703,332.

Read, Benjamin Hays; and Black, Rexford E., to Signetics Corporation. Electrolytic etch apparatus. 3,703,458, Cl. 204-198.000.

Recognition Equipment Incorporated: *See*—
Philipson, Herman L., Jr., 3,703,628.

Reece, Thomas L.; and Bryant, Thurman E., to Dover Corporation, mesne. Filter with rotating backwash selector. 3,703,465, Cl. 210-333.000.

Regents of the University of California, The: *See*—
Pence, Roy J., 3,703,101.

Regie National des Usines Renault: *See*—
Piret, Jean, 3,703,107.

Regie Nationale des Renault: *See*—
Pernoud, Claude, 3,703,141.

Regie Nationale des Usines Renault: *See*—
Remaud, Jacques C.; and Bouthors, Pierre, 3,703,320.

Reitter, Teodoro. Internal combustion rotary engine. 3,703,344, Cl. 418-61.000.

Rejmaniak, Susan English: *See*—
Gomersall, Earl Raymond; Meyer, Roger Paul; and Rejmaniak, Susan English, 3,703,725.

Remaud, Jacques C.; and Bouthors, Pierre, to Regie Nationale des Usines Renault and Automobiles Peugeot. Braking system control and anti-lock devices. 3,703,320, Cl. 303-21.00f.

Renaut, Jacques: *See*—
Florent, Jean; Lunel, Jean; and Renaut, Jacques, 3,703,439.

Reni, Cesare: *See*—
Lugo, Luigi; Gualdi, Girogio; and Reni, Cesare, 3,703,547.

Rex Chainbelt, Inc.: *See*—
Schramm, Lester H.; Rank, John B.; and Salkeld, Melvin R., 3,703,016.

Rhone-Poulenc S.A.: *See*—
Florent, Jean; Lunel, Jean; and Renaut, Jacques, 3,703,439.
Laforest, Jean; and Miton, Pierre, 3,703,466.

Rhone-Progil: *See*—
Fischer, Nicolas, 3,703,485.

Rice, George A.: *See*—
Girard, Roland T.; and Rice, George A., 3,703,390.

Rice, James S., to Industrial Nucleonics Corporation. Anticipatory control of headbox slice opening in a paper machine. 3,703,436, Cl. 162-198.000.

Rich, Joseph L. Apparatus for fabricating plastic cushioning an insulating material. 3,703,430, Cl. 156-497.000.

Richmond, Ernest L.: *See*—
Beroff, Howard; and Richmond, Ernest L., 3,703,452.

Richter, Carl; Pluss, Kurt; and Feth, Georg, to Cilag-Chemie, A.G. Adamantyl urea derivatives. 3,703,537, Cl. 260-468.00b.

Riegel Textile Corporation: *See*—
Goodbar, Reid C.; and Pressley, Arther Mitchell, 3,703,073.
Kern, Dale W., 3,703,175.

Riffkin, Charles; Rifino, Carl B.; and Cyr, Gilman N., to Squibb, E. R., & Sons, Inc. α-aminobenzyl penicillins. 3,703,511, Cl. 260-239.001.

Rifino, Carl B.: *See*—
Riffkin, Charles; Rifino, Carl B.; and Cyr, Gilman N., 3,703,511.

Rigsby, Canby A., Sr., to Globe-Union Inc. Battery and method of making the same. 3,703,589, Cl. 136-134.00r.

Riviers, Marie. Drawer divider and drawer organizer. 3,703,326, Cl. 312-330.000.

Roberts, Arthur H. Method of casting rigid foam to support a hollow flexible plastic shell. 3,703,571, Cl. 264-45.000.

Robinson, Seymour. Ultrasonic dental hand-piece with detachable treatment tools. 3,703,037, Cl. 32-58.000.

Rock Fall Company Limited: *See*—
Abrahams, Joseph L., 3,703,212.

Roe, Harry L., Jr.: *See*—
Maierson, Theodore; Roe, Harry L., Jr.; and Williams, James E., 3,703,254.

Roeder & Spengler OHG: *See*—
Spengler, Ernst Maximilian, 3,703,118.

Roffelsen, Franciscus, to Naomloze Venootschap Spiro Research N.V. Heat exchanger. 3,703,253, Cl. 228-17.000.

Roland Offselmaschinenfabrik Faber: *See*—
Abendroth, Paul; and Kaiser, Werner, 3,703,283.

Roldugin, Vladimir Ivanovich: *See*—
Sysun, Viktor Viktorovich; Skvortsov, Boris Vasilievich; Basov, Jury Georgievich; and Roldugin, Vladimir Ivanovich, 3,703,658.

Roman, Robert J.: *See*—
Bundschuh, John J.; Roman, Robert J.; and Thomson, Kenneth W., 3,703,333.

Rosa, Albert G.; and Birrer, George W., to McDonnell Douglas Corporation. Heat sealed flexible envelope separator and battery embodying same. 3,703,417, Cl. 136-145.000.

Rose-Miller, Brigadier George Patrick. Container for transport of animals. 3,703,159, Cl. 119-19.000.

Rosen, Fred D., to North American Rockwell Corporation. Particle-size measuring apparatus. 3,703,641, Cl. 250-218.000.

Rosen, Karl Isac Joel. Combined thread-feeding and lubricating device for knitting machines. 3,703,090, Cl. 66-132.00r.

Rosenkaimer GmbH: *See*—
Uthemann, Wolfgang; and Zimmermann, Richard (said Zimmermann assor. to), 3,703,182.

Ross, Donald R. Folding box. 3,703,256, Cl. 229-39.000.

Rosse, Thomas A.; Blackmer, David E.; Zindler, Jerrold; and Kelley, Thomas F., to Analysis system employing a plural chamber cuvette. structure. 3,703,336, Cl. 356-39.000.

Roth, Shirley H.: *See*—
Green, Joseph; Roth, Shirley H.; and Seipel, John J., 3,703,487.

Roth, Shirley H., to Cities Service Company. Aminobenzoic acid sulfates as intumescent agent. 3,703,409, Cl. 117-136.000.

Roth, Shirley H., to Cities Service Company. 5-Amino-2-nitrobenzoic acid as an intumescent agent. 3,703,410, Cl. 117-136.000.

Rothweiler, Werner B., to Ciba-Geigy Corporation. Preparation of benzilic acid compounds. 3,703,597, Cl. 260-520.000.

Rototron Corporation: *See*—
Pivar, Stewart, 3,703,348.

Rouse, William, to Imperial Chemical Industries, Limited. Pressure transducer. 3,703,099, Cl. 73-398.0ar.

Rowe, Geoffrey Whaley: *See*—
Farr, John Peter George; and Rowe, Geoffrey Whaley, 3,703,449.

Rubenstein, Leonard, to Learning Appliances Limited. Amplifier switching means for a telephone answering device. 3,703,608, Cl. 179-6.00r.

Russ, Mark A.: *See*—
Wise, George L.; and Russ, Mark A., 3,703,305.

Russell, Arvin E. Towing dolly. 3,703,240, Cl. 314-86.00a.

Russell, Dale F. Ventilated toilet. 3,703,010, Cl. 4-216.000.

Ruyle, William V.: *See*—
Shen, Tsung-Ying; Ruyle, William V.; Walford, Gordon L.; and Witzel, Bruce E., 3,703,582.

Ryan, Thomas J.: *See*—
Nelden, Richard M.; and Ryan, Thomas J., 3,703,078.

Ryckman, William D., Jr., to General Electric Company. Oral hygiene apparatus. 3,703,170, Cl. 128-66.000.

Saccomano, Joseph M.; and Ellis, John D., Jr., to Joslyn Manufacture and Supply Co. Reactor. 3,703,279, Cl. 266-41.000.

Saito, Kimihiko: *See*—
Hanada, Keiichi; Saito, Kimihiko; and Iwase, Akikazu, 3,703,633.

Saito, Norio; and Kimura, Hiroshiro, to Norio Saito and Unitika, Ltd. Method for imparting antistatic properties to polymeric materials. 3,703,588, Cl. 117-138.80b.

Sakai, Ichio: *See*—
Uozumi, Sumio; Sakai, Ichio; and Ohnuma, Kiyoshi, 3,703,110.

Sakamoto, Eiichi: *See*—
Sakazume, Kaiichiro; Sakamoto, Eiichi; Itoh, Shigemasa; Fujimori, Noboru; and Baba, Shigeji, 3,703,377.

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Sakurada, Ichiro; Okada, Toshio; and Uragami, Motoaki, to Japan Atomic Energy Research Institute. Process for manufacturing a durable oily stain resistant polyester fiber, and its product. 3,703,406, Cl. 117-118.000.

Salkeld, Melvin R.: *See*—
Schramm, Lester H.; Rank, John B.; and Salkeld, Melvin R., 3,703,016.

Salminen, Wilho M.: *See*—
Groet, Nicholas H.; and Salminen, Wilho M., 3,703,375.

Salmon, David; Wierzbicki, Edward J.; Langston, Benny; and Beegle, Donald W., to U. S. Reduction Co. Mechanical puddler. 3,703,340, Cl. 416-79.000.

Samler, Lee F.; and Boone, John J., to Esso Research and Engineering Company. Carpet backing. 3,703,197, Cl. 117-138.80e.

Sandor, Bela: *See*—
Campbell, Edward E.; and Sandor, Bela, 3,703,308.

Sandoz Ltd.: *See*—
Buecheler, Paul; and Steiner, Karl Ulrich, 3,703,350.

Sandoz-Wander, Inc.: *See*—
Griot, Rudolf G., 3,703,560.

Sankyo Company Limited: *See*—
Nakanishi, Kazuo; and Takei, Shuzo, 3,703,441.
Takahashi, Shogo; Yamada, Takayasu; and Okudaira, Hiromi, 3,703,365.

Santiago, Andres; and Santiago, Enrique, to Zeuna-Staerker KG. Apparatus for the detoxification of exhaust gases of internal combustirn engines. 3,703,082, Cl. 60-282.000.

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Santilli, Arthur A.: *See*—
Kim, Dong H.; and Santilli, Arthur A., 3,703,516.
Kim, Dong H.; and Santilli, Arthur A., 3,703,517.

Sargent, Thomas J. Molded granite. 3,703,433, Cl. 161-162.000.

Sasaki, Takaaki: *See*—
Takasu, Itaru; Sasaki, Takaaki; and Yamamoto, Akira, 3,703,541.

Sato, Katsumi; Nakamura, Takashi; Nakamura, Masaru; Hirasawa, Kazuo; Hamada, Mitsuo; Takahashi, Kenzi; Yashima, Masaaki; Ozaki, Toshiaki; Yamamoto, Sigeo; Ooishi, Tadashi; Fujinami, Akira; Horiuchi, Fukashi; and Nodera, Katsuji, to Sumitomo Chemical Co. Lt. and Hokko Chemical Industry Co., Ltd. Novel 3-(3,5-dichlorophenyl)oxazolidine-2,4-dione derivatives. 3,703,526, Cl. 260-357.00b.

Sato, Masamichi: *See*—
Tamai, Yasuo; Sato, Masamichi; Matsumoto, Seiji; and Honjo, Satoru, 3,703,400.

Saucy, Gabriel, to Hoffmann-La Roche Inc. Preparation of Mannich-bases. 3,703,527, Cl. 260-307.000.

Sauer, Richard W.: *See*—
Hersh, Harold R.; and Sauer, Richard W., 3,703,490.

Saul, Robert H. Electroluminescent device. 3,703,671, Cl. 317-235.00r.

Sawchuk, Loris G.: *See*—
Araujo, Roger J.; Sawchuk, Loris G.; and Seward, Thomas P., III, 3,703,388.

Schaaf, Ronald L., to Minnesota Mining and Manufacturing Company. Heat-activatable adhesive sheets. 3,703,434, Cl. 161-167.000.

Schaefer, Hans: *See*—
Budich, Wolfgang; Theissen, Hans; Schaefer, Hans; and Andree, Walter, 3,703,063.

Schaffer, Detlef: *See*—
Knechtel, Wilhelm Josef; and Schaffer, Detlef, 3,703,334.

Schall, William L.: *See*—
Hodan, James J.; and Schall, William L., 3,703,496.

Schenavar, Harold E.; and Pierce, Irving L. Quick-detachable outrigger fishing device. 3,703,047, Cl. 43-43.150.

Schiavitto, Charles A. Athletic knee supporter and protective device. 3,703,171, Cl. 128-80.00c.

Schiesterl, Gerhard; and Wulf, Helmut, to Daimler-Benz Aktiengesellschaft. Seat, especially for motor vehicles. 3,703,313, Cl. 297-391.000.

Schiesterl, Gerhard; and Eibl, Josef, to Daimler-Benz Aktiengesellschaft. Automotive vehicle warning device with all position ignition key circuit actuation via steering lock. 3,703,704, Cl. 340-64.000.

Schleicher AG: *See*—
Abendroth, Paul; and Kaiser, Werner, 3,703,283.

Schleinkofer, Rudi William, to Sunds Aktiebolag. Method for finely disintegrating pulp, preferentially cellulose pulp, in connection with the bleaching thereof with gaseous bleaching agent. 3,703,435, Cl. 162-17.000.

Schlicker, Volker: *See*—
Merkle, Alfred; Schlicker, Volker; and Wrobel, Gunter, 3,703,221.

Schmalfeld, Paul: *See*—
Rammler, Roland; and Schmalfeld, Paul, 3,703,442.

Schmitt, Roman A. Anti-fog headlight with opaque mask. 3,703,636, Cl. 240-46.430.

Schmitt, William H.: *See*—
Cella, John A.; and Schmitt, William H., 3,703,578.

Schnarr, Howard A., to Massey-Ferguson Industries Limited. Filing cabinet construction. 3,703,325, Cl. 312-307.000.

Schneiter, John W.: *See*—
Sellers, John C.; and Schneiter, John W., 3,703,427.

Schoeffler, William N. Breakaway conductor pipe. 3,703,190, Cl. 137-375.000.

Scholz, Werner: *See*—
Boehm, Otto; and Scholz, Werner, 3,703,214.

Schoonover, Richard H. A., to Formac International, Inc., mesne. Track assembly for tracked vehicles. 3,703,321, Cl. 305-38.000.

Schramm, Lester H.; Rank, John B.; and Salkeld, Melvin R., to Rex Chainbelt, Inc. Traversing bridge friction drive alignment control. 3,703,016, Cl. 15-246.500.

Schreiber, Erich; Freyn, Fritz; and Noraberg, John, to List, Hans. Single-cylinder internal combustion engine. 3,703,178, Cl. 184-6.500.

Schulz, Werner: *See*—
Walther, Gerhard; Bauer, Rudolf; Schulz, Werner; and Sirrenberg, Walther, 3,703,523.

Schuster, Ludwig: *See*—
Falkenstein, Georg; Peine, Hans Georg; Doerfel, Helmut; Raff, Paul; and Schuster, Ludwig, 3,703,595.

Schwarz, Gerhard, to Compur-Werk Gesellschaft mit beschrankter Haftung & Co. Photographic camera with interchangeable objective shutter. 3,703,136, Cl. 95-42.000.

Schwarz, Rudolf, to Staubli AG. Heddle frame lift device. 3,703,195, Cl. 139-71.000.

Schwarzer, Franz: *See*—
Busch, Walter; and Schwarzer, Franz, 3,703,570.

SCM Corporation: *See*—
Bordenca, Carl, 3,703,554.

Scott Paper Company: *See*—
Wade, Gordon E., 3,703,255.
Wolkowicz, Richard I., 3,703,569.

Scott, William W., Jr., to Lukens Steel Company. Method of starting electroslag remelting process with molten slag. 3,703,600, Cl. 13-9.000.

Scovil, Henry Evelyn Derrick: *See*—

Bobeck, Andrew Henry; and Scovil, Henry Evelyn Derrick, 3,703,712.

Scovill Manufacturing Company: *See*—

Ackermann, Walter Thomas; and Daley, Thomas Joseph, 3,703,148.

Scudder, Philmore M., to Sun Oil Company. Thiourea pseudocumene adduct. 3,703,503, Cl. 260-96.50t.

Seaton, William W., to Patusa Aktiengesellschaft. Foundry stopper having parallelogram rigging. 3,703,248, Cl. 222-504.000.

Seeburg Corporation of Delaware, The: *See*—

Wrabel, James A., 3,703,648.

Seiferth, Oscar E.; and Austin, Glenn M., to Oscar Mayer & Co., Inc. Easily opened bacon package. 3,703,384, Cl. 99-174.000.

Seiler, Lazar I.; and Nicholas, James P., to Yankee Metal Products Corporation. Replacement windshield wiper unit. 3,703,018, Cl. 15-250.420.

Seipel, John J.: *See*—

Green, Joseph; Roth, Shirley H.; and Seipel, John J., 3,703,487.

Sekmakas, Kazys, to DeSoto, Inc. Electrocoating method based on copolymers containing maleic half esters. 3,703,455, Cl. 204-181.000.

Selander, Bror Olle Herbert, to AB Spacio System Malmo. Locking mechanism for vertically adjustable drawing boards. 3,703,147, Cl. 108-145.000.

Selby, Jack H., to Warner & Swasey Company, The. Machine tool with bar feed control. 3,703,112, Cl. 82-2.500.

Sellers, John C.; and Schneiter, John W. Thermal impulse sealing bar assembly. 3,703,427, Cl. 156-359.000.

Seward, Thomas P., III: *See*—

Araujo, Roger J.; Sawchuk, Loris G.; and Seward, Thomas P., III, 3,703,388.

Seybolt, Alan U., to General Electric Company. Chromium-containing bodies of improved resistance to oxidation and nitrification. 3,703,369, Cl. 75-206.000.

Shaffer, Howard R.: *See*—

Gryctko, Carl E.; and Shaffer, Howard R., 3,703,691.

Shair, Fredrick H.; and Ravimohan, Arakali L., to United States of America, Atomic Energy Commission. Non-equilibrium plasma reactor for natural gas processing. 3,703,460, Cl. 204-327.000.

Shanks, John L., to Amoco Production Company. Recursion filter. 3,703,632, Cl. 235-152.000.

Shanrock, Raymond L., to Data Recognition Corporation. Document transport apparatus and method. 3,703,626, Cl. 235-61.11r.

Shanstrom, Raymond T.: *See*—

Fortescue, Peter; and Shanstrom, Raymond T., 3,703,437.

Sharp, Allen W. Poultry processing method and apparatus. 3,703,021, Cl. 17-47.000.

Shaw, Irving Franklin; and Hinden, Stephen David, to West Laboratories, Inc. Pine-ammonia detergent composition. 3,703,472, Cl. 252-107.000.

Shaw, Trevor: *See*—

Dobinson, Bryan; Hope, Paul; Winterbottom, Kenneth; and Shaw, Trevor, 3,703,352.

Shell Oil Company: *See*—

Blytas, George C., 3,703,573.

Haycock, Ernest W.; and Prober, Richard, 3,703,446.

Titus, Paul E., 3,703,476.

Shen, Tsung-Ying; Ruyle, William V.; Walford, Gordon L.; and Witzel, Bruce E., to Merck & Co., Inc. Aryl pyridine carboxylic acids in the treatment of inflammation. 3,703,582, Cl. 424-266.000.

Shenshev, Leonid Vladimirovich. Machine for teaching foreign languages. 3,703,602, Cl. 35-35.00c.

Sheppard, Jon C.: *See*—

Agnone, John L.; Fister, Robert V.; and Sheppard, Jon C., 3,703,585.

Shesser, Arthur B., to Burroughs Corporation. Variable pattern gaseous display panel having segmented cathode electrodes. 3,703,657, Cl. 313-109.500.

Shikhman, Mark Aronovich: *See*—

Topopolsky, Yankel Meerovich; and Shikhman, Mark Aronovich, 3,703,114.

Shilov, Alexandr Evgenievich: *See*—

Denisov, Nikolai Timofeevich; Efimov, Oleg Nikolaevich; Shuvalov, Viktor Fedorovich; Shuvalova, Natalia Ivanovna; Shilova, Alla Konstantinovna; and Shilov, Alexandr Evgenievich, 3,703,354.

Shilova, Alla Konstantinovna: *See*—

Denisov, Nikolai Timofeevich; Efimov, Oleg Nikolaevich; Shuvalov, Viktor Fedorovich; Shuvalova, Natalia Ivanovna; Shilova, Alla Konstantinovna; and Shilov, Alexandr Evgenievich, 3,703,354.

Shimamoto, Toshihiro: *See*—

Nomura, Fumio; Takamiya, Yutaka; Mizuno, Sakuhiro; Higashi, Kunio; and Shimamoto, Toshihiro, 3,703,698.

Shimp, David Alan: *See*—

Carlos, Donald Dante; and Shimp, David Alan, 3,703,497.

Shoji, Kenjiro: *See*—

Inoi, Takeshi; Sueyoshi, Koji; Fujii, Masahiro; Shoji, Kenjiro; Shudo, Akio; Yoshizaki, Takayoshi; and Yutaka, Matsuo, 3,703,518.

Shudo, Akio: *See*—

Inoi, Takeshi; Sueyoshi, Koji; Fujii, Masahiro; Shoji, Kenjiro; Shudo, Akio; Yoshizaki, Takayoshi; and Yutaka, Matsuo, 3,703,518.

Shuvalov, Viktor Fedorovich: *See*—

Denisov, Nikolai Timofeevich; Efimov, Oleg Nikolaevich; Shuvalov, Viktor Fedorovich; Shuvalova, Natalia Ivanovna; Shilova, Alla Konstantinovna; and Shilov, Alexandr Evgenievich, 3,703,354.

Shuvalova, Natalia Ivanovna: *See*—

Denisov, Nikolai Timofeevich; Efimov, Oleg Nikolaevich; Shuvalov, Viktor Fedorovich; Shuvalova, Natalia Ivanovna; Shilova, Alla Konstantinovna; and Shilov, Alexandr Evgenievich, 3,703,354.

Sias, Roy C., to Continental Oil Company. Preparation of oil soluble sulfonic acids useful as dispersant additives. 3,703,475, Cl. 252-353.000.

Siemens Aktiengesellschaft: *See*—

Lugscheider, Walter, 3,703,447.

Signetics Corporation: *See*—

Kendall, Larry J., 3,703,650.

Read, Benjamin Hays; and Black, Rexford E., 3,703,458.

Silvandersson, Jonnie Thor-Leif, to AB Akerlund & Rausing. Method of and apparatus for producing a tubing from a strip of material. 3,703,252, Cl. 228-15.000.

Simms, James S. Improvements in tensioning devices. 3,703,030, Cl. 29-252.000.

Simopoulos, Nicholas T.; and Tsui, James B. Y., to Labtron Corporation of America. Multiband antenna with associated R. F. amplifier. 3,703,685, Cl. 325-373.000.

Simpson, Robert O. Radial wire tire having improved sidewall cut resistance. 3,703,203, Cl. 152-354.000.

Simpson, Roy: *See*—

Cavalla, John Frederick,; Simpson, Roy; and White, Alan Chapman, 3,703,529.

Simsack, Anton. Self contained solder iron kit. 3,703,624, Cl. 219-229.000.

Sirrenberg, Walther: *See*—

Walther, Gerhard; Bauer, Rudolf; Schulz, Werner; and Sirrenberg, Walther, 3,703,523.

Skelley, John W.: *See*—

Milton, Thomas J.; and Skelley, John W., 3,703,105.

SKF Industrial Trading and Development Company NV: *See*—

Gustafsson, Anders Christer, 3,703,322.

Skupas, John A.; and Godwin, Robert H., to Bliss & Laughlin Industries, Inc. Anti-fouling caster, swivel-type. 3,703,020, Cl. 16-31.000.

Skvortsov, Boris Vasilievich: *See*—

Sysun, Viktor Viktorovich; Skvortsov, Boris Vasilievich; Basov, Jury Georgievich; and Roldugin, Vladimir Ivanovich, 3,703,658.

Smatkr, Joseph S., to McDonnell Douglas Corporation. Low-gassing battery separator and method of production. 3,703,414, Cl. 136-30.000.

Smidth, F. L., & Co.: *See*—

Sylvest, Karl Jens, 3,703,275.

Smith, Carroll G. Combination rotatable oil dip stick and wiper. 3,703,038, Cl. 33-126.70r.

Smith, George W. Sewage treatment apparatus and method. 3,703,462, Cl. 210-7.000.

Smith, Gordon E., to Medidyne Corporation. Method and apparatus for catheter injection. 3,703,174, Cl. 128-214.400.

Smith, Lee E. Chest. 3,703,324, Cl. 312-279.000.

Smith, Max D.; and Adkins, Frank M., to Indian Industries, Inc. Net holder for table tennis table. 3,703,287, Cl. 273-30.000.

Smith, Sally J. Portable hand-operated pressing device for clothing or the like. 3,703,042, Cl. 38-69.000.

Smith, William; and McGrath, Charles E. Machine tool guard and/or safety shield. 3,703,124, Cl. 90-11.00r.

Snyder, Thomas P.: *See*—

Tarnopol, Milton S.; and Snyder, Thomas P., 3,703,445.

Societa' Italiana Resine S.p.A.: *See*—

Lugo, Luigi; Gualdi, Girogio; and Reni, Cesare, 3,703,547.

Societe d'Etudes de Machines Thermiques: *See*—

Haug, Albert, 3,703,126.

Societe Nationale Industrielle Aerospatiale: *See*—

Alric, Andre A. L.; Porte, Gilbert R. A.; Glotin, Joseph M. H.; Higounenq, Francis J.; and Boussin, Serge P., 3,703,675.

Southern Cross Corporation: *See*—

Carter, Bob A., 3,703,356.

Southwire Company: *See*—

Cofer, Daniel B.; and Bray, Thomas L., 3,703,261.

Space Ordnance Systems, Inc., mesne: *See*—

Colburn, William H., Jr., 3,703,144.

Spacht, Ronald B. N-Phenyl-N'-salicyloyl-phenylene diamines. 3,703,552, Cl. 260-559.000.

Spaeth, Irvin J., to Evans Products Company. Railway brake gear bottom rod guard. 3,703,225, Cl. 188-210.000.

Spanos, Theodore, III; and Godar, Richard L., to Petrolite Corporation. Use of poly-ester-amide-acids as rust or corrosion inhibitors. 3,703,587, Cl. 21-2.500.

Sparks, Charles H. Cloth reinforcing member for use in making tissue grafts. 3,703,009, Cl. 3-1.000.

Spectral Data Corporation: *See*—

Yost, Edward F., Jr., 3,703,133.

Spectrol Electronics Corporation: *See*—

Lahm, James; and Hill, Robert D., Jr., 3,703,699.

Spengler, Ernst Maximilian, to Roeder & Spengler OHG. Punching apparatus. 3,703,118, Cl. 83-542.000.

Sperry Rand Corporation: *See*—

Oliver, Kenneth L., 3,703,267.

Spoor, Herbert: *See*—

Marx, Matthias; Becker, Ernst; and Spoor, Herbert, 3,703,596.

Spurlin, William V.; and Carroll, Patrick J., to FMC Corporation. Vibrator mounting. 3,703,236, Cl. 209-326.000.

Squibb, E. R., & Sons, Inc.: *See*—

Riffkin, Charles; Rifino, Carl B.; and Cyr, Gilman N., 3,703,511.

Stamicarbon N.V.: *See*—

Venderbos, Dirk J.; and Van Dierendonck, Laurentius L., 3,703,502.

Standard Alliance Industries, Inc.: *See*—

Thibodeau, John L., 3,703,216.

Standard Oil Company: *See*—

Piasek, Edmund J.; Karll, Robert E.; and Lee, Richard J., 3,703,536.

Staneff, Stefan, to Industriewerk Schaeffler OHG. Method and apparatus for spinning sliver. 3,703,074, Cl. 57-58.950.

Stanford Research Institute: *See*—

Vassiliadis, Arthur; Zweng, Harold C.; Peppers, Norman A.; and Alterton, Lloyd E., 3,703,176.

Stanford University: *See*—

Vassiliadis, Arthur; Zweng, Harold C.; Peppers, Norman A.; and Alterton, Lloyd E., 3,703,176.

Stanley electric Co., Ltd.: *See*—

Watanabe, Kazue, 3,703,620.

Starkweather, Gary K.: *See*—

Hoffman, Sanford G.; Jackson, Earl V.; Starkweather, Gary K.; and Zucker, Edwin, 3,703,335.

Starr, Irving. Paddle with elastic coil ball tether. 3,703,292, Cl. 273-97.00r.

Staubli AG: *See*—

Schwarz, Rudolf, 3,703,195.

Staudacher, Gerald R.; and Ames Sidney W., to Dow Chemical Company, The. Alarm and safeguard system for a controlled environment box. 3,703,192, Cl. 137-554.000.

Stauffer Chemical Company: *See*—

Gutman, Arnold D., 3,703,532.

Steele, Johathan Peter, to Hoover Company, The. Centrifugal extraction machines. 3,703,091, Cl. 68-23.100.

Stein, Werner; and Flory, Klaus, to Henkel & Cie G.m.b.H. Low-foaming rinsing, washing and cleaning compositions. 3,703,469, Cl. 252-89.000.

Steiner, Karl Ulrich: *See*—

Buecheler, Paul; and Steiner, Karl Ulrich, 3,703,350.

Stellar Industries Ltd.: *See*—

Gordy, John; and Harris, Douglas R., 3,703,453.

Stephens, Thomas M.: *See*—

Takahashi, Yoshihiro; Moore, Robert T.; and Stephens, Thomas M., 3,703,355.

Stephenson, Donald A., to Corning Glass Works. Quantitative chemical analysis by X-ray emission spectroscopy. 3,703,726, Cl. 444-1.000.

Sternbach, Leo Henryk: *See*—

Earley, James Valentine; Fryer, Rodney Ian; and Sternbach, Leo Henryk, 3,703,510.

Sterne, Jean Jacques: *See*—

Aron-Samuel, Jan Marcel Didier; and Sterne, Jean Jacques, 3,703,514.

Stevens, J. P., & Company, Inc.: *See*—

Oroszlan, Andrew; and Tesoro, Giuliana C., 3,703,509.

Stevenson, Graham T., to Dow Chemical Company, The. Substituted pyridines employed in animal husbandry for controlling coccidiosis. 3,703,581, Cl. 424-263.000.

Stewart, Gloria. Finger ring display glove. 3,703,007, Cl. 2-63.000.

Stoddard, William H., Jr.: *See*—

Niedrach, Leonard W.; and Stoddard, William H., Jr., 3,703,457.

Stoyell, Loyal A.: *See*—

Hard, Robert A.; Stoyell, Loyal A.; and Young, Claude F., 3,703,039.

Straitz, John F., III, to Combustion Unlimited, Incorporated. Ground flare. 3,703,349, Cl. 431-202.000.

Strange, Carl P.: *See*—

Hoblit, Louis D.; and Strange, Carl P., 3,703,565.

Strehler, Richard; Eichinger, Hans; and Hubl, Julius, to Hurth, Carl, Maschinen- und Zahnradfabrik. Shiftable friction clutch. 3,703,226, Cl. 192-48.910.

Sturgess, Geoffrey John; Hoffman, Jacob Sherman; Vdoviak, John William; and Hirschkron, Robert, to General Electric Company. Air blast fuel atomizer. 3,703,259, Cl. 239-400.000.

Sueyoshi, Koji: *See*—

Inoi, Takeshi; Sueyoshi, Koji; Fujii, Masahiro; Shoji, Kenjiro; Shudo, Akio; Yoshizaki, Takayoshi; and Yutaka, Matsuo, 3,703,518.

Sugarman, Meyer L.; and Wilkie, Thomas A., to Opto/Graphics, Inc. Production of black and white prints from color transparencies by electrostatic process. 3,703,370, Cl. 96-1.01y.

Sugimoto, Kaname: *See*—

Okada, Shigetaka; Tsuyama, Naoto; Kurimoto, Masahi; and Sugimoto, Kaname, 3,703,440.

Sumitomo Chemical Co. Ltd.: *See*—

Sato, Katsumi; Nakamura, Takashi; Nakamura, Masaru; Hirasawa, Kazuo; Hamada, Mitsuo; Takahashi, Kenzi; Yashima, Masaaki; Ozaki, Toshiaki; Yamamoto, Sigeo; Ooishi, Tadashi; Fujinami, Akira; Horiuchi, Fukashi; and Nodera, Katsuji, 3,703,526.

Sumitomo Chemical Company, Ltd.: *See*—

Yamamoto, Hisao; and Kaneko, Shin-Ichi, 3,703,513.

Sun Oil Company: *See*—

Scudder, Philmore M., 3,703,503.

Sunds Aktiebolag: *See*—

Schleinkofer, Rudi William, 3,703,435.

Surls, Joseph P.; Bauer, David L.; and West, Ben F., to Dow Chemical Company, The. Process for the preparation of rutile titanium dioxide needles. 3,703,357, Cl. 23-202.00r.

Sushkin, Vyacheslav Petrovich: *See*—

Povolotsky, Aron Markovich; Sushkin, Vyacheslav Petrovich; Fateichev, Anatoly Semenovich; and Gavrilov, Nikolai Vasilievich, 3,703,025.

Sutter, Hubert; and Beck, Manfred, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of segment copolymer. 3,703,567, Cl. 260-880.00b.

Suzsuki, Saburo; Isono, Kiyoshi; and Nagatsu, Junsaku. Antibiotics of agricultural fungicides, polyoxins D, E, F, G and H. 3,703,506, Cl. 260-211.50r.

Suzuki, Isao: *See*—

Kikuchi, Makoto; and Suzuki, Isao, 3,703,100.

Suzuki, Michio, to Pioneer Electronic Corporation. Magnetic tape magazine playing device. 3,703,251, Cl. 226-90.000.

Suzuki, Takatoshi: *See*—

Komatsu, Noboru; Suzuki, Takatoshi; Ito, Takuo; Hara, Yoshiteru; and Asakura, Kouichi, 3,703,093.

Swan Trailers Inc.: *See*—

Randle, Dee, 3,703,301.

Swengel, Robert Charles, Sr., to AMP Incorporated. Pre-insulated and uninsulated wire terminal bonding process and apparatus. 3,703,623, Cl. 219-137.000.

Swift, Harold E.: *See*—

Bozik, John E.; Swift, Harold E.; and Wu, Ching-Yong, 3,703,483.

Swift, William C. Electronic timing system for milking. 3,703,645, Cl. 307-154.000.

Sybron Corporation: *See*—

Heit, Allyn Harold; and Williamson, James Norris, 3,703,508.

Paxhia, Emmanuel A.; and Willett, David A., 3,703,639.

Sylvest, Karl Jens, to Smidth, F. L., & Co. Treatment of cement raw materials. 3,703,275, Cl. 263-32.00r.

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Tadokoro, Tomoo, to Toyo Kogyo Co., Ltd. Reactor. 3,703,083, Cl. 60-322.000.

Takahashi, Kenzi: *See*—

Sato, Katsumi; Nakamura, Takashi; Nakamura, Masaru; Hirasawa, Kazuo; Hamada, Mitsuo; Takahashi, Kenzi; Yashima, Masaaki; Ozaki, Toshiaki; Yamamoto, Sigeo; Ooishi, Tadashi; Fujinami, Akira; Horiuchi, Fukashi; and Nodera, Katsuji, 3,703,526.

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Takamiya, Takehisa: *See*—

Yamamoto, Kozo; and Takamiya, Takehisa, 3,703,295.

Takamiya, Yutaka: *See*—

Nomura, Fumio; Takamiya, Yutaka; Mizuno, Sakuhiro; Higashi, Kunio; and Shimamoto, Toshihiro, 3,703,698.

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Takeda Chemical Industries, Ltd.: *See*—

Keshi, Akizo; Yoshii, Kunio; Yokoo, Makoto; and Nakai, Kaichi, 3,703,484.

Tawada, Hiroyuki; Meguro, Kanji; and Kuwada, Yutaka, 3,703,525.

Takeda, Fumio: *See*—

Takayama, Yuzi; Ichimura, Yutaka; Minmmi, Shunsuke; Aoyagi, Takanobu; and Takeda, Fumio, 3,703,491.

Takei, Shuzo: *See*—

Nakanishi, Kazuo; and Takei, Shuzo, 3,703,441.

- Takimoto, Hisateru: *See—*
  - Ohnishi, Shigekazu; Nishishita, Masaharu; and Takimoto, Hisateru, 3,703,403.
- Tamai, Yasuo; Sato, Masamichi; Matsumoto, Seiji; and Honjo, Satoru, to Fuji Photo Film Co., Ltd. Developing method for electrophotography. 3,703,400, Cl. 117-37.0le.
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  - Honda, Makoto; Tanaka, Kyugo; and Watanabe, Itaru, 3,703,548.
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  - Okabe, Tadao; Oikawa, Mitsuru; Tanaka, Makoto; and Nagashiro, Waichi, 3,703,374.
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  - Jones, Giffin D.; and Tefertiller, Nancy B., 3,703,553.
- Teledyne Industries, Inc.: *See—*
  - Erwin, Rudy, 3,703,368.
- Telefonaktiebolaget L M Ericsson: *See—*
  - Hasselbohm, Sune Sigurd Sixten, 3,703,700.
- Tennessee Valley Authority: *See—*
  - Jordan, John E., 3,703,364.
- Terasawa, Masaji: *See—*
  - Iijima, Hiroshi; Terasawa, Masaji; Gotoh, Yutaro; and Tokita, Osamu, 3,703,418.
- Tesoro, Giuliana C.: *See—*
  - Oroszlan, Andrew; and Tesoro, Giuliana C., 3,703,509.
- Texas Instruments, Incorporated: *See—*
  - Belasco, Melvin; and Borrello, Sebastian R., 3,703,408.
  - Gomersall, Earl Raymond; Meyer, Roger Paul; and Rejmaniak, Susan English, 3,703,725.
- Theilacker, Klaus: *See—*
  - Liebert, Oskar; and Theilacker, Klaus, 3,703,281.
- Theimer, Ernst T., to International Flavors & Fragrances, Inc. Saturated indane derivatives and processes for producing same. 3,703,479, Cl. 252-522.000.
- Theissen, Hans: *See—*
  - Budich, Wolfgang; Theissen, Hans; Schaefer, Hans; and Andree, Walter, 3,703,063.
- Thibodeau, John L., to Standard Alliance Industries, Inc. Tractor drive conversion. 3,703,216, Cl. 180-44.00r.
- Thiele, Heinrich. Reconstructed cartilaginous tissue and method of implanting it into the human or animal body. 3,703,575, Cl. 424-27.000.
- Tholen, Dale. Convertible tent and luggage container. 3,703,181, Cl. 135-1.00a.
- Thoma, Paul E., to Johnson Service Company. Condition control system and integrated sensor and feedback chamber unit therefor. 3,703,257, Cl. 236-44.000.
- Thomas, Carlton E., to KMS Industries, Inc. Recorder with zone plate scanner. 3,703,724, Cl. 346-108.000.
- Thomson, Kenneth W.: *See—*
  - Bundschuh, John J.; Roman, Robert J.; and Thomson, Kenneth W., 3,703,333.
- Thomson-CSF: *See—*
  - Broussaud, Georges; and Lowenthal, Serge, 3,703,640.
- Thorborg, Kjeld, to Allmanna Svenka Elektriska Aktiebolaget. Synchronising device. 3,703,644, Cl. 307-64.000.
- Thorn Electronics Limited: *See—*
  - Farrow, Victor, 3,703,677.
- Thunderline Corporation: *See—*
  - Gignac, Robert J., 3,703,297.
- Titus, Paul E., to Shell Oil Company. Method for forming an oily fluid-water-soluble solid particles slurry. 3,703,476, Cl. 252-309.000.
- Tokita, Osamu: *See—*
  - Iijima, Hiroshi; Terasawa, Masaji; Gotoh, Yutaro; and Tokita, Osamu, 3,703,418.
- Tomlin, Robert Derrick, to Magnatex Limited. Mounting means. 3,703,270, Cl. 248-475.00a.
- Tomozaki, Riyouzou: *See—*
  - Murakami, Tadao; Kikuchi, Ken; Tomozaki, Riyouzou; and Ohuchi, Yasushi, 3,703,227.
- Topopolsky, Yankel Meerovich; and Shikhman, Mark Aronovich, to Vsesojuzny Proektno-Konstruktorsky Institut Svarochnogo. Device for removing flash from seams of butt-welded long-measure articles. 3,703,114, Cl. 83-3.000.
- Torano Limitee: *See—*
  - Hedrei, Constantin, 3,703,196.
- Torpey, Wilbur N. Apparatus for the biological treatment of waste-water. 3,703,238, Cl. 210-151.000.
- Townsend Engineering Company: *See—*
  - Townsend, Ray T., 3,703,199.
- Townsend, Ray T., to Townsend Engineering Company. Automatic blade control mechanism for meat skinning machines. 3,703,199, Cl. 146-130.000.
- Townsend, Robert H.: *See—*
  - Little, William S., Jr.; and Townsend, Robert H., 3,703,459.
- Toyo Kogyo Co., Ltd.: *See—*
  - Tadokoro, Tomoo, 3,703,083.
- Toyoda Koki Kabushiki Kaisha: *See—*
  - Kikuchi, Makoto; and Suzuki, Isao, 3,703,100.
- Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
  - Arai, Hiroshi, 3,703,702.
  - Uozumi, Sumio; Sakai, Ichio; and Ohnuma, Kiyoshi, 3,703,110.
- Tracy, Robert D.; and Derouin, David J. Reciprocating motor with motion conversion means. 3,703,653, Cl. 310-24.000.
- Tremelin, James D.: *See—*
  - Musyt, William; and Tremelin, James D., 3,703,201.
- Tremmel, Robert: *See—*
  - Clauss, Richard J.; Tremmel, Robert; and Becking, Donald H., 3,703,448.
- Troitino, Manuel Lopez. Aircraft with separable cockpit. 3,703,265, Cl. 244-13.000.
- Trolley, John Henry, to Coal Industry (Patents) Limited. Apparatus for plowing loose particulate material. 3,703,315, Cl. 299-34.000.
- TRW Inc.: *See—*
  - Batista, Roy I., 3,703,032.
  - Bhuta, Pravin G.; Johnson, Robert L.; and Graham, Douglas J., 3,703,463.
  - Van Buren, Harold S., Jr., 3,703,120.
- Tsui, James B. Y.: *See—*
  - Simopoulos, Nicholas T.; and Tsui, James B. Y., 3,703,685.
- Tsuneoka, Yoozi: *See—*
  - Kitajima, Masao; Tsuneoka, Yoozi; and Kondo, Asaji, 3,703,576.
- Tsuyama, Naoto: *See—*
  - Okada, Shigetaka; Tsuyama, Naoto; Kurimoto, Masahi; and Sugimoto, Kaname, 3,703,440.
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- Tyco Laboratories, Inc.: *See—*
  - Cocks, Franklin H., 3,703,367.
- U. S. Reduction Co.: *See—*
  - Salmon, David; Wierzbicki, Edward J.; Langston, Benny; and Beegle, Donald W., 3,703,340.
- Uhrig, Wilhelm. Apparatus for manufacturing a slide fastener. 3,703,026, Cl. 29-33.200.
- Uhtenwoldt, Herbert R., to Cincinnati Milacron-Heald Corporation. Grinding machine. 3,703,054, Cl. 51-165.910.
- Union Carbide Corporation: *See—*
  - Hard, Robert A.; Stoyell, Loyal A.; and Young, Claude F., 3,703,039.
  - Morehouse, Edward L., 3,703,489.
  - Wagner, John L., 3,703,068.
- Union Oil Company of California: *See—*
  - Hansford, Rowland C., 3,703,461.
- Uniroyal Aktiengesellschaft: *See—*
  - Deboeur, Francois Fernand; and Plumhans, Paul Jean, 3,703,346.
- United Aircraft Corporation: *See—*
  - Waehner, Glenn C., 3,703,659.
- United Kingdom Atomic Energy Authority: *See—*
  - Healy, Thomas Victor; and Pilbeam, Alan, 3,703,451.
- United States of America
  - Atomic Energy Commission: *See—*
    - Brenner, Abner; and Anderson, Harvey J., 3,703,405.
    - Heckman, Richard A.; and Cowles, John O., 3,703,208.
    - Shair, Fredrick H.; and Ravimohan, Arakali L., 3,703,460.
  - Navy: *See—*
    - Allen, Philip J., 3,703,330.
    - Bernaerts, Henry J., 3,703,211.
    - Beyer, Henry R.; Long, Thomas F.; and De Sipio, Richard G., 3,703,719.
    - Burkhardt, Lawrence E.; and Johnson, Charles H., 3,703,145.
    - Mast, Phillip W.; and Beaubien, Laurent A., 3,703,012.
    - Wickman, Miles X.; and Cohn, Harold P., 3,703,682.
- Unitika, Ltd.: *See—*
  - Saito, Norio; and Kimura, Hiroshiro, 3,703,588.
- Uozumi, Sumio; Sakai, Ichio; and Ohnuma, Kiyoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic control system for an automatic transmission. 3,703,110, Cl. 74-868.000.
- Upjohn Company, The: *See—*
  - Carleton, Peter S.; and Farrissey, William J., Jr., 3,703,520.
  - Chess, Samuel; and Cleveland, Bruce B., 3,703,468.
  - Kelly, Robert C., 3,703,530.
  - Kirk, William W., 3,703,404.
  - Morozowich, Walter, 3,703,544.
- Uragami, Motoaki: *See—*
  - Sakurada, Ichiro; Okada, Toshio; and Uragami, Motoaki, 3,703,406.
- Urbin, Matthew C. Label identification system. 3,703,625, Cl. 235-61.11c.
- Usry, Joe D., to E-System, Inc., mesne. Force balancing flapper valve. 3,703,185, Cl. 137-82.000.
- Uthemann, Wolfgang; and Zimmermann, Richard, said Uthemann assor. to Bauerman, W. & Sohne GmbH and said Zimmermann assor. to Rosenkaimer GmbH. Telescopic umbrella. 3,703,182, Cl. 135-25.000.
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- Van Dierendonck, Laurentius L.: *See—*
  - Venderbos, Dirk J.; and Van Dierendonck, Laurentius L., 3,703,502.
- Vandevord, George E.: *See—*
  - Farrington, Dale A.; and Vandevord, George E., 3,703,122.
- Vassiliadis, Arthur; Zweng, Harold C.; Peppers, Norman A.; and Alterton, Lloyd E., 1/2 to Stanford Research Institute and 1/2 to Stanford University. Slit lamp photocoagulator. 3,703,176, Cl. 128-395.000.
- Vdoviak, John William: *See—*
  - Sturgess, Geoffrey John; Hoffman, Jacob Sherman; Vdoviak, John William; and Hirschkron, Robert, 3,703,259.
- Vecchio, Martino; Carraro, Giorgi; and Cammarata, Italo, to Montecatini Edison S.p.A. Process for the preparation of tetrafluoroethylene by dechlorination and dimerization of dichlorodifluoromethane. 3,703,557, Cl. 260-653.300.
- Venderbos, Dirk J.; and Van Dierendonck, Laurentius L., to Stamicarbon N.V. Process for isolating organic compounds dissolved in an organic solvent. 3,703,502, Cl. 260-80.780.
- Verden, James A. Blower-speed regulator for forced-air heating systems. 3,703,205, Cl. 165-26.000.
- Vereinigte Osterreichische Eisen- und Stahlwerk Aktiengesellschaft: *See—*
  - Krausz, Johann; and Feichtinger, Johan, 3,703,057.
  - Wogerbauer, Alfred, 3,703,085.
- Viola, Ronald J.; and Keeney, Lawrence V., to Rapid Electric Co., Inc. Reciprocating frustro-conical plug switch contact and assembly. 3,703,621, Cl. 200-163.000.
- Vitter, Albert L., Jr.; and McDonald, Hugh G., to Chevron Research Company. Method of determining downhole occurrences in well drilling using rotary torque oscillation measurements. 3,703,096, Cl. 73-151.000.
- Vock, Richard C.: *See—*
  - Gundlach, Robert W.; and Vock, Richard C., 3,703,376.
- Vogel, John D.; and Canfield, William N., to Arvin Industries, Inc. Electronic bowling game. 3,703,288, Cl. 273-41.000.
- Vogt, Kuno J. Cable connector and switch. 3,703,615, Cl. 200-51.070.
- Vora, Madhukar B., to International Business Machines Corporation. Lateral transistor structure and process for forming the same. 3,703,420, Cl. 148-175.000.
- Vsesojuzny Proektno-Konstruktorsky Institut Svarochnogo: *See—*
  - Topopolsky, Yankel Meerovich; and Shikhman, Mark Aronovich, 3,703,114.
- Wada, Ken-Ichi: *See—*
  - Tanaka, Susumu; and Wada, Ken-Ichi, 3,703,399.
- Wade, Gordon E., to Scott Paper Company. Plastic container having expanded side wall. 3,703,255, Cl. 229-1.50b.
- Waehner, Glenn C., to United Aircraft Corporation. Stroke write symbol generator. 3,703,659, Cl. 315-24.000.
- Wagner, Daniel G., to Westinghouse Air Brake Company. Automatic drain valve device. 3,703,188, Cl. 137-204.000.
- Wagner, Harold H., to Caterpillar Tractor Company. Control system for adding and removing alternators from a system. 3,703,663, Cl. 317-13.00r.
- Wagner, John L., to Union Carbide Corporation. Control system for selective adsorption process. 3,703,068, Cl. 55-21.000.
- Walbro Corporation: *See—*
  - O'Connor, Alton J., 3,703,342.
- Walford, Gordon L.: *See—*
  - Shen, Tsung-Ying; Ruyle, William V.; Walford, Gordon L.; and Witzel, Bruce E., 3,703,582.
- Walker, Gerald R.: *See—*
  - De Rees, Delbert D.; and Walker, Gerald R., 3,703,053.
- Wallmark, John Torkel, to Institutet for Halvledorforskning AB. Voltage-responsive capacitance device and a method of producing such a device. 3,703,666, Cl. 317-234.000.
- Walsh, David P.; and Walsh, Joanne M. Trailer chassis. 3,703,244, Cl. 214-517.000.
- Walsh, Joanne M.: *See—*
  - Walsh, David P.; and Walsh, Joanne M., 3,703,244.
- Walterscheid, Jean, K.G., Firma: *See—*
  - Geisthoff, Hubert; Welschof, Hans-Heinrich; and Grosse-Entrup, Hubert, 3,703,089.
- Walther, Gerhard; Bauer, Rudolf; Schulz, Werner; and Sirrenberg, Walther, to Boehringer Ingelheim G.m.b.H. Tropanol esters of alpha-phenyl-alpha-cyclopentyl-acetic. 3,703,523, Cl. 260-292.000.
- Warner & Swasey Company, The: *See—*
  - Selby, Jack H., 3,703,112.
- Warner, Gene: *See—*
  - Hatcher, Cecil W.; and Warner, Gene, 3,703,316.
- Watanabe, Asao, to Nippon Kogaku K.K. Electronic shutter control device. 3,703,130, Cl. 95-15.0ct.
- Watanabe, Itaru: *See—*
  - Honda, Makoto; Tanaka, Kyugo; and Watanabe, Itaru, 3,703,548.
- Watanabe, Kazue, to Stanley electric Co., Ltd. Pull switch with housing portions of different diameters and switch crntact made at the interface of said portions. 3,703,620, Cl. 200-161.000.
- Watson, Donald R.: *See—*
  - Haskell, Theodore H.; and Watson, Donald R., 3,703,507.
- Weaving, John Harold, to British Leyland Motor Corporation Limited. Atmospheric pollution control arrangement for internal combustion engine. 3,703,164, Cl. 123-119.00a.
- Webb, Richard A.: *See—*
  - Kesten, Patrick N.; Webb, Richard A.; and Bedford, Raymond E., 3,703,387.
- Webster, George H.: *See—*
  - Dembiak, Matthew R.; and Webster, George H., 3,703,605.
- Weigmann, Erich W.: *See—*
  - Lincks, Hans; and Weigmann, Erich W., 3,703,266.
- Weinberger, Pearl. Methods for improving the growth characteristic of plant material such as seeds and growing plants. 3,703,051, Cl. 47-58.000.
- Weir, Henry John. Laundry stacking machine. 3,703,280, Cl. 270-83.000.
- Weller, David Reis, to Bell Telephone Laboratories, Inc. Isolating power supply. 3,703,678, Cl. 323-19.000.
- Welschof, Hans-Heinrich: *See—*
  - Geisthoff, Hubert; Welschof, Hans-Heinrich; and Grosse-Entrup, Hubert, 3,703,089.
- Werkzeugbau GmbH: *See—*
  - Boehm, Otto; and Scholz, Werner, 3,703,214.
- West, Ben F.: *See—*
  - Surls, Joseph P.; Bauer, David L.; and West, Ben F., 3,703,357.
- West Laboratories, Inc.: *See—*
  - Shaw, Irving Franklin; and Hinden, Stephen David, 3,703,472.
- Western Electric Company, Incorporated: *See—*
  - Dembiak, Matthew R.; and Webster, George H. (said Dembiak assor to), 3,703,605.
  - Dugan, Allan Edward, 3,703,637.
  - Kent, William C., 3,703,029.
- Western Printing Machinery Co.: *See—*
  - Henkel, Allmen P., 3,703,282.
- Westinghouse Air Brake Company: *See—*
  - Wagner, Daniel G., 3,703,188.
- Westland Aircraft Limited: *See—*
  - Furlong, Owen Desmond, 3,703,139.
- Wheeler, Harry L., Jr. Compressed air filter. 3,703,069, Cl. 55-337.000.
- White, Alan Chapman: *See—*
  - Cavalla, John Frederick,; Simpson, Roy; and White, Alan Chapman, 3,703,529.
- White, Dwain M., to General Electric Company. Bis(polyphenylene oxide)-ester block copolymers. 3,703,564, Cl. 260-860.000.
- White, Michael W., Jr.; and Plamondon, Jacques A., to Colorado Technologists Incorporated. Liquid fuel cooking stove. 3,703,166, Cl. 126-44.000.
- Wickman, Miles X.; and Cohn, Harold P., to United States of America, Navy. Long axis gradiometer. 3,703,682, Cl. 324-43.00r.
- Widder, James S. Compositions for inhibiting anomalous deposition and mobilization of calcium phosphate in animal tissue. 3,703,579, Cl. 424-128.000.
- Wierzbicki, Edward J.: *See—*
  - Salmon, David; Wierzbicki, Edward J.; Langston, Benny; and Beegle, Donald W., 3,703,340.
- Wildner, Walter, to Motoren- und Turbinen-Union Munchen GmbH. Thrust reverser unit. 3,703,258, Cl. 239-265.290.
- Wilkie, Thomas A.: *See—*
  - Sugarman, Meyer L.; and Wilkie, Thomas A., 3,703,370.
- Will, Fritz G.: *See—*
  - Mitofe, Stephan P.; and Will, Fritz G., 3,703,415.
- Willem, Michel, to Ceraver. Pin-type insulator. 3,703,606, Cl. 174-169.000.
- Willett, David A.: *See—*
  - Paxhia, Emmanuel A.; and Willett, David A., 3,703,639.
- Williams, Charles P.; and Williams, William K. Extender assembly for extension planks. 3,703,220, Cl. 182-223.000.
- Williams, James E.: *See—*
  - Maierson, Theodore; Roe, Harry L., Jr.; and Williams, James E., 3,703,254.
- Williams, Marion: *See—*
  - Williams, Ray J.; and Miller, Raymond R., 3,703,210.
- Williams, Ray J.; deceased (by Williams, Marion; administratrix); and Miller, Raymond R. Mold board materials gate for motor patrols. 3,703,210, Cl. 172-784.000.
- Williams, William K.: *See—*
  - Williams, Charles P.; and Williams, William K., 3,703,220.
- Williamson, James Norris: *See—*
  - Heit, Allyn Harold; and Williamson, James Norris, 3,703,508.
- Wilson, Larry E.: *See—*
  - Johnson, Gary N.; and Wilson, Larry E., 3,703,681.
- Wilson, Lee, Engineering Company, Inc.: *See—*
  - Ford, Joseph R., 3,703,276.
- Wilson, Richard c., to Aluminum Company of America. Ball bat construction. 3,703,290, Cl. 273-72.50a.
- Winn, James Buchanan, Jr., to Aichilithic Company, The. Dispensing of fibrous material. 3,703,264, Cl. 242-129.000.
- Winsor, Jack O.: *See—*
  - Hamilton, William H.; and Winsor, Jack O., 3,703,314.
- Winterbottom, Kenneth: *See—*
  - Dobinson, Bryan; Hope, Paul; Winterbottom, Kenneth; and Shaw, Trevor, 3,703,352.
- Wise, George L.; and Russ, Mark A., to Borg-Warner Corporation. Spring clip retainer. 3,703,305, Cl. 287-52.050.
- Witco Chemical Corporation: *See—*
  - Barker, Graham; and Campbell, Herman W., 3,703,481.
  - Davis, David S.; and Kim, Young K., 3,703,556.
- Witzel, Bruce E.: *See—*

Shen, Tsung-Ying; Ruyle, William V.; Walford, Gordon L.; and Witzel, Bruce E., 3,703,582.
Wixon, Harold Eugene: *See—*
Grand, Paul Sheldon; and Wixon, Harold Eugene, 3,703,480.
Wogerbauer, Alfred, to Vereinigte Osterreichische Eisen- und Stahlwerk Aktiengesellschaft. Sheet pile section. 3,703,085, Cl. 61-60.000.
Wolfe, Merritt W., to Goodyear Tire & Rubber Company, The. Method of relugging large pneumatic tires. 3,703,423, Cl. 156-96.000.
Wolkowicz, Richard I., to Scott Paper Company. Corona treatment of antistat containing sheet of ethylene or ethylene copolymer. 3,703,569, Cl. 264-22.000.
Woodling, George V. Bearing support means and drive for rotary valve in fluid pressure device. 3,703,343, Cl. 418-61.500.
Woodward, Robert Burns: *See—*
Heusler, Karl; and Woodward, Robert Burns, 3,703,512.
Worthen, Richard A., to Carrier Corporation. Turbine speed control. 3,703,183, Cl. 137-47.000.
Wrabel, James A., to Seeburg Corporation of Delaware, The. Reset circuit for logic system in quiescent state for a predetermined time upon application of power and upon power fluctuational below a predetermined level. 3,703,648, Cl. 307-293.000.
Wright, Arthur J.: *See—*
Lin, Chao-Han; and Wright, Arthur J., 3,703,397.
Wrobel, Gunter: *See—*
Merkle, Alfred; Schlicker, Volker; and Wrobel, Gunter, 3,703,221.
Wu, Ching-Yong: *See—*
Bozik, John E.; Swift, Harold E.; and Wu, Ching-Yong, 3,703,483.
Wulf, Helmut: *See—*
Schiesterl, Gerhard; and Wulf, Helmut, 3,703,313.
Wyeth, John, & Brother Limited: *See—*
Cavalla, John Frederick,; Simpson, Roy; and White, Alan Chapman, 3,703,529.
Xerox Corporation: *See—*
Gundlach, Robert W.; and Vock, Richard C., 3,703,376.
Hoffman, Sanford G.; Jackson, Earl V.; Starkweather, Gary K.; and Zucker, Edwin, 3,703,335.
La Chance, Murdock H., 3,703,306.
Little, William S., Jr.; and Townsend, Robert H., 3,703,459.
Maksymiak, John; and Hart, Lawrence M., 3,703,157.
Yamada, Takayasu: *See—*
Takahashi, Shogo; Yamada, Takayasu; and Okudaira, Hiromi, 3,703,365.
Yamagishi, Hidehisa; Yokoi, Fumitoshi; and Kutino, Tsuyoshi, to Nippon Kokan Kabushiki Kaisha. Method of surface treating steel products with metal powder. 3,703,407, Cl. 117-131.000.
Yamamoto, Akira: *See—*
Takasu, Itaru; Sasaki, Takaaki; and Yamamoto, Akira, 3,703,541.
Yamamoto, Hisao; and Kaneko, Shin-Ichi, to Sumitomo Chemical Company, Ltd. Novel 3,5-dioxopyrazolidine derivatives. 3,703,513, Cl. 260-240.00d.
Yamamoto, Kozo; and Takamiya, Takehisa, to Matsushita Electric Industrial Co., Ltd. Magnetic recording and reproducing apparatus. 3,703,295, Cl. 274-4.00g.
Yamamoto, Sigeo: *See—*
Sato, Katsumi; Nakamura, Takashi; Nakamura, Masaru; Hirasawa, Kazuo; Hamada, Mitsuo; Takahashi, Kenzi; Yashima, Masaaki; Ozaki, Toshiaki; Yamamoto, Sigeo; Ooishi, Tadashi; Fujinami, Akira; Horiuchi, Fukashi; and Nodera, Katsuji, 3,703,526.
Yamashita, Nobuyuki: *See—*
Nagae, Yasuyuki; and Yamashita, Nobuyuki, 3,703,115.
Yankee Metal Products Corporation: *See—*
Seiler, Lazar I.; and Nicholas, James P., 3,703,018.
Yashima, Masaaki: *See—*
Sato, Katsumi; Nakamura, Takashi; Nakamura, Masaru; Hirasawa, Kazuo; Hamada, Mitsuo; Takahashi, Kenzi; Yashima, Masaaki; Ozaki, Toshiaki; Yamamoto, Sigeo; Ooishi, Tadashi; Fujinami, Akira; Horiuchi, Fukashi; and Nodera, Katsuji, 3,703,526.
Yeomans, Bertram, to BP Chemicals Limited. Production of dicarboxylic acids. 3,703,549, Cl. 260-533.00a.
Yereance, Robert A.; and Erlenbach, Harold W., Jr., to Cook Electric Company. Electric overvoltage arresters with improved electrode design. 3,703,665, Cl. 317-61.000.
Yokoi, Fumitoshi: *See—*
Yamagishi, Hidehisa; Yokoi, Fumitoshi; and Kutino, Tsuyoshi, 3,703,407.
Yokoo, Makoto: *See—*
Keshi, Akizo; Yoshii, Kunio; Yokoo, Makoto; and Nakai, Kaichi, 3,703,484.
Yoshida, Masaru: *See—*
Nakase, Yoshiaki; Yoshida, Masaru; Ito, Akihiko; Iwai, Tadashi; Hayashi, Koichiro; Okamura, Seizo; and Kojima, Katsumi, 3,703,454.
Yoshii, Kunio: *See—*
Keshi, Akizo; Yoshii, Kunio; Yokoo, Makoto; and Nakai, Kaichi, 3,703,484.
Yoshino, Stanley Y., to North American Rockwell Corporation. Polyaromatic resin faced honeycomb panel and method for making same. 3,703,422, Cl. 156-87.000.
Yoshizaki, Takayoshi: *See—*
Inoi, Takeshi; Sueyoshi, Koji; Fujii, Masahiro; Shoji, Kenjiro; Shudo, Akio; Yoshizaki, Takayoshi; and Yutaka, Matsuo, 3,703,518.
Yost, Edward F., Jr., to Spectral Data Corporation. Obtaining ground truth for multispectral photography. 3,703,133, Cl. 95-12.500.
Young, Claude F.: *See—*
Hard, Robert A.; Stoyell, Loyal A.; and Young, Claude F., 3,703,039.
Yutaka, Matsuo: *See—*
Inoi, Takeshi; Sueyoshi, Koji; Fujii, Masahiro; Shoji, Kenjiro; Shudo, Akio; Yoshizaki, Takayoshi; and Yutaka, Matsuo, 3,703,518.
Zakaria, Moneeb; Raphaelian, Leo A.; Taber, David; and Brown, James, Jr., to Armour-Dial, Inc. Synergistic antiseptic compositions. 3,703,471, Cl. 252-107.000.
Zbiegien, Stanley J. Container orienting apparatus. 3,703,232, Cl. 198-33.0ad.
Zell, Dale Richard: *See—*
Henschen, Homer Ernst; and Zell, Dale Richard, 3,703,604.
Zeuna-Staerker KG: *See—*
Santiago, Andres; and Santiago, Enrique, 3,703,082.
Zimmerman, John Aaron, Jr., to AMP Incorporated. Movable contact connector assembly. 3,703,701, Cl. 339-22.50r.
Zimmermann, Richard: *See—*
Uthemann, Wolfgang; and Zimmermann, Richard, 3,703,182.
Zindler, Jerrold: *See—*
Rosse, Thomas A.; Blackmer, David E.; Zindler, Jerrold; and Kelley, Thomas F., 3,703,336.
Zingg, Roy J.: *See—*
Pohm, Arthur V.; and Zingg, Roy J., 3,703,713.
Zinser-Textilmaschinen Gesellschaft mit beschrankter Haftung: *See—*
Krauss, Paul; and Igel, Wolfgang, 3,703,023.
Zubaty, Martin V.; and Higgins, Louis W., to I.T.E. Imperial Corporation. Handle tie for push-push circuit breakers. 3,703,614, Cl. 200-50.00c.
Zucker, Edwin: *See—*
Hoffman, Sanford G.; Jackson, Earl V.; Starkweather, Gary K.; and Zucker, Edwin, 3,703,335.
Zuech, Ernest A.: *See—*
Kubicek, Donald H.; and Zuech, Ernest A., 3,703,561.
Zuech, Ernest A., to Phillips Petroleum Company. Hydrolysis of imines and resultant products. 3,703,555, Cl. 260-601.00r.
Zweng, Harold C.: *See—*
Vassiliadis, Arthur; Zweng, Harold C.; Peppers, Norman A.; and Alterton, Lloyd E., 3,703,176.
Zwickert, Charles Emile. Fire resistant products and process of making the same. 3,703,385, Cl. 106-137.000.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 21ST DAY OF NOVEMBER, 1972

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Attwood, Terence E., J. B. Rose, and A. F. Lennox, to Imperial Chemical Industries Ltd. Aromatic polymers. T904,027, 11-21-72. Cl. 260—49.
Brizee, Mary J. W. Sensitizing dye combinations containing benzimidazolobenzoxazolocarbocyanine dyes. T904,026, 11-21-72. Cl. 96—124.
Chapman, Derek D. Photographic emulsions. T904,034, 11-21-72, Cl. 96—100.
Ciurca, Samuel J., Jr. Novel cyan-dye-forming coupler. T904,035, 11-21-72, Cl. 96—100.
Cobel, George B.: *See—*
Kelly, James A., and Cobel. T904,023.
Continental Oil Co.: *See—*
Schuman, Leonard J., and Ertle. T904,025.
Contois, Lawrence E.: *See—*
Reynolds, George A., Vanallan, and Contois. T904,032.
Copelin, Harry B. to E. I. du Pont de Nemours and Co. Preparation of diols from unsaturated alcohols. T904,021, 11-21-72, Cl. 260—635.
Davie, Neil R., to International Business Machines Corp. Unique class of two-pole active filters. T904,030, 11-21-72, Cl. 307—295.
Dow Chemical Co., The: *See—*
Kelly, James A., and Cobel. T904,023.
Du Pont de Nemours, E. I., and Co.: *See—*
Copelin, Harry B. T904,021.
Ertle, Raymond T.: *See—*
Schuman, Leonard J., and Ertle. T904,025.
Ford, Frederick E., and H. S. A. Gilmour. Self-heating diffusion transfer film unit. T904,028, 11-21-72, Cl. 96—76.
Gaskin, Stuart, and E. Nield, to Imperial Chemical Industries Ltd. Copolymers. T904,029, 11-21-72, Cl. 260—857.
Gilmour, Hugh S. A.: *See—*
Ford, Frederick E., and Gilmour. T904,028.
Huffaker, James E., and C. L. Terrell. Method and apparatus for controlling draw down of plastic coating process. T904,019, 11-21-72. Cl. 156—272.
Imperial Chemical Industries Ltd.: *See—*
Attwood, Terence E., Rose, and Lennox. T904,027.
Gaskin, Stuart, and Nield. T904,029.
International Business Machines Corp.: *See—*
Davie, Neil R. T904,030.
Kasper, George P.: *See—*
Kroon, Keith W., and Kasper. T904,018.
Kelly, James A., and G. B. Cobel, to The Dow Chemical Co. Direct addition of magnesium-metal to a turbine engine combustion chamber. T904,023, 11-21-72, Cl. 60—39.20.
Klemchuk, Peter. Chemically cross-linked polyethylene stabilized with sulfur containing alkylesters of hindered hydroxyphenylalkanoic acids. T904,024, 11-21-72, Cl. 260—45.85 B.
Kroon, Keith W., and G. P. Kasper. Coating compositions. T904,018, 11-21-72, Cl. 250—80.
Kurz, Richard K., and D. V. Young. Method of increasing the sharpness of photographic images. T904,022, 11-21-72, Cl. 96—109.
Lane, George C., to Warner-Lambert Co. Razor blade coating. T904,020, 11-21-72. Cl. 204—192.
Lee, Robert G., and M. M. Norton. Monoammonium phosphate production. T904,032, 11-21-72, Cl. 71—34.
Lee, Robert G., and M. M. Norton. Monoammonium phosphate production. T904,033, 11-21-72, Cl. 71—34.
Lennox, Alan F.: *See—*
Attwood, Terence E., Rose, and Lennox. T904,027.
McCullough, John F., and R. C. Sheridan. Ammonium polyphosphates. T904,031, 11-21-72, Cl. 423—305.
Nield, Eric: *See—*
Gaskin, Stuart, and Nield. T904,029.
Norton, Melvin M.: *See—*
Lee, Robert G., and Norton. T904,032.
Lee, Robert G., and Norton. T904,033.
Reynolds, George A., J. A. Vanallan, and L. E. Contois. Sensitizing dyes for electrophotographic composition and element. T904,032, 11-21-72, Cl. 96—1.6.
Rose, John B.: *See—*
Attwood, Terence E., Rose, and Lennox. T904,027.
Schuman, Leonard J., and R. T. Ertle, to Continental Oil Co. Anti-soiling alumina coatings for porous surfaces. T904,025, 11-21-72, Cl. 117—138 UA.
Sheridan, Richard C.: *See—*
McCullough, John F., and Sheridan. T904,031.
Terrell, Carl L.: *See—*
Huffaker, James E., and Terrell. T904,019.
Vanallan, James A.: *See—*
Reynolds, George A., Vanallan, and Contois. T904,032.
Warner-Lambert Co.: *See—*
Lane, George C. T904,020.
Young, David V.: *See—*
Kurz, Richard K., and Young. T904,022.

LIST OF DESIGN PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF NOVEMBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Acton, Hugh C., to The Vecta Group, Inc. Magazine tree. 225,141, 11-21-72. Cl. D6—20.
American Home Products Corp.: *See—*
Cleeland, Raymond T. 225,178.
Arthur Salm Inc.: *See—*
Laughlin, Clayton A. 225,177.
Ashton, Harold P., and J. B. Swett, to Dart Industries Inc. Bowl. 225,170, 11-21-72, Cl. D44—15.
Bartoo, George O.: *See—*
Spengler, Duane E., Bartoo, and Smith. 225,166.
Bibeau, Ronald J.: *See—*
Gardner, Sewart E., Bibeau, and Bonifield. 225,159.
Billotte, Keith W. Toy box. 225,167, 11-21-72. Cl. D34—15.
Blendl, John, to Metal Cabinet Co. Fire extinguisher cabinet. 225,162, 11-21-72, Cl. D16—2.
Bonifield, Charles B.: *See—*
Gardner, Stewart E., Bibeau, and Bonifield. 225,159.
Cassia, Antonio M., to Steiner Co. Lausanne S.A. Towel cabinet. 225,175, 11-21-72. Cl. D52—2.
Cleeland, Raymond T., to American Home Products Corp. Spoon or similar article. 225,178, 11-21-72. Cl. D54—12.
Cole, Clinton W. Stock trailer. 225,158, 11-21-72, Cl. D14—3.
Collins, Robert: *See—*
Weber, George H., and Collins. 225,180.
Dart Industries Inc.: *See—*
Ashton, Harold P., and Swett. 225,170.
Doe, Walter P., to The Quaker Oats Co. Pull toy. 225,165, 11-21-72. Cl. D34—15.
Eib, Byon E. Television lamp. 225,172, 11-21-72, Cl. D48—20.
Escalante, Conrad J. Outdoor illuminated sign. 225,187, 11-21-72, Cl. D96—12.
F.J.L. Corp.: *See—*
Skinner, James R., Uitz, and Hait. 225,181.
Fisher, Morris F., to Mohasco Industries, Inc. Chair. 225,144, 11-21-72. Cl. D6—39.
Fisher, Morris F., to Mohasco Industries, Inc. Chair. 225,147, 11-21-72, Cl. D6—71.
Fisher, Morris F., to Mohasco Industries, Inc. Chair. 225,148, 11-21-72, Cl. D6—71.
Forrester, Joseph H. Chest of drawers or similar article. 225,150. 11-21-72. Cl. D6—152.
Futorian Corp.: *See—*
Winrow, Thomas. 225,142.
Winrow, Thomas. 225,145.
Gardner, Inc.: *See—*
Gardner, Stewart E., Bibeau, and Bonifield. 225,159.
Gardner, Stewart E., R. J. Bibeau, and C. B. Bonifield, to Gardner, Inc. Trailer. 225,159, 11-21-72. Cl. D14—3.
General Tire & Rubber Co., The: *See—*
Smith, Sidney Z. 225,171.
Gold Seal Co.: *See—*
Schafer, Harold. 225,155.
Grace, W. R., & Co.: *See—*
Hart, Robert L. 225,151.
Reid, Philip L. 225,156.
Reid, Philip L. 225,157.
Hait, Paul W.: *See—*
Skinner, James R., Uitz, and Hait. 225,181.
Hart, Robert L., to W. R. Grace & Co. Garment hanger. 225,151, 11-21-72, Cl. D6—255.
International Multifoods Corp.: *See—*
McGowan, John T. 225,169.
Ito, Shima: *See—*
Ono, Taisuke, and Ito. 225,186.
Janome Sewing Machine Co., Ltd.: *See—*
Yamamoto, Yasuaki. 225,182.
Keller, Huey T. Headboard for a bedstead or similar article. 225,140, 11-21-72, Cl. D5—4.
Ketcham & McDougall, Inc.: *See—*
Macowski, William. 225,179.
Kettler, Heinz, to Heinz Kettler. Arm-chair. 225,146, 11-21-72, Cl. D6—69.
Kittner, Benjamin, to Vernitron Medical Products Inc. Cleaning adapter for a jet hypodermic injection device. 225,185, 11-21-72, Cl. D83—12.

Laughlin, Clayton A., to Arthur Salm Inc. Article of flatware. 225,177, 11–21–72, Cl. D54—12.

Macowski, William, to Ketcham & McDougall, Inc. Paper shredder. 225,179, 11–21–72, Cl. D55—1.

Mfg. Quenot Mabo: *See—*
  Quenot, Andre. 225,173.
  Quenot, Andre. 225,174.

Marx, Louis, & Co. Inc.: *See—*
  Yeoh, Allan. 225,168.

Matsushita Electric Works, Ltd.: *See—*
  Ono, Taisuke, and Ito. 225,186.

McGowan, John T., to International Multifoods Corp. Fondue heating stand. 225,169, 11–21–72, Cl. D44—10.

Metal Cabinet Co.: *See—*
  Blendl, John. 225,162.

Mohasco Industries, Inc.: *See—*
  Fisher, Morris F. 225,144.
  Fisher, Morris F. 225,147.
  Fisher, Morris F. 225,148.

Ono, Taisuke, and S. Ito, to Matsushita Electric Works, Ltd. Design for electric razor. 225,186, 11–21–72, Cl. D95—3.

Packaging Techniques, Inc.: *See—*
  Robins, Ruth. 225,152.

Palumbo, Caludio, to Phono-Sonic Radio Corp. Combined beverage cart and housing for an audio unit. 225,149, 11–21–72, Cl. D6—46.

Phono-Sonic Radio Corp.: *See—*
  Palumbo, Caludio. 225,149.

Quaker Oats Co., The: *See—*
  Doe, Walter P. 225,165.
  Spengler, Duane E., Bartoo, and Smith. 225,166.

Quenot, Andre, to Mfg. Quenot Mabo. Tape measure. 225,173, 11–21–72, Cl. D52—1.

Quenot, Andre, to Mfg. Quenot Mabo. Plumb line. 225,174, 11–21–72, Cl. D52—1.

Reid, Philip L., to W. R. Grace & Co. Positioner for poultry products and the like. 225,156, 11–21–72, Cl. D11—1.

Reid, Philip L., to W. R. Grace & Co. Positioner for poultry products and the like. 225,157, 11–21–72, Cl. D11—1.

Richmond, Jimmy J. Trash can caster support. 225,153, 11–21–72, Cl. D8—226.

Ritchie, David A., to Sherwood Medical Industries Inc. Coagulyzer reaction cuvette. 225,161, 11–21–72, Cl. D16—1.

Ritter, George J. Combined valet stand and seat. 225,143, 11–21–72, Cl. D6—33.

Robins, Ruth, to Packaging Techniques, Inc. Lock for windows and doors. 225,152, 11–21–72, Cl. D8—150.

Schafer, Harold, to Gold Seal Co. Bottle. 225,155, 11–21–72, Cl. D9—143.

Sherwood Medical Industries Inc.: *See—*
  Ritchie, David Alan. 225,161.

Singer, Monroe J. Bottle or similar article. 225,154, 11–21–72, Cl. D9—48.

Skinner, James R., M. O. Uitz, and P. W. Hait, to F.J.L. Corp. Motion picture viewer. 225,181, 11–21–72, Cl. D61—1.

Smith, John D.: *See—*
  Spengler, Duane E., Bartoo, and Smith. 225,166.

Smith, Sidney Z., to The General Tire & Rubber Co. Water pitcher. 225,171, 11–21–72, Cl. D44—21.

Spengler, Duane E., G. O. Bartoo, and J. D. Smith, to The Quaker Oats Co. Toy garage. 225,166, 11–21–72, Cl. D34—15.

Spies, Donald H. Combination engine muffler. 225,184, 11–21–72, Cl. D77—1.

Steiner Co. Lausanne S.A.: *See—*
  Cassia, Antonio M. 225,175.

Swett, James B.: *See—*
  Ashton, Harold P., and Swett. 225,170.

Thomas, Earl F. Foot platform for trucks. 225,160, 11–21–72, Cl. D14—6.

Uitz, Mark O.: *See—*
  Skinner, James R., Uitz, and Hait. 225,181.

Vecta Group, Inc., The: *See—*
  Acton, Hugh C. 225,141.

Vennettilli, Raymond M. Glove. 225,139, 11–21–72, Cl. D2—372.

Vernitron Medical Products Inc.: *See—*
  Kittner, Benjamin. 225,185.

Waddell, Theodore. Electric lamp. 225,163, 11–21–72, Cl. D26—8.

Wallace, George M. Religious ornament. 225,164, 11–21–72, Cl. D29—23.

Waters, Margaret J. Buoyant infant seat. 225,183, 11–21–72, Cl. D71—1.

Weber Corp., The: *See—*
  Weber, George H., and Collins. 225,180.

Weber, George H., and R. Collins, to The Weber Corp. Portable piano. 225,180, 11–21–72, Cl. D56—9.

Winrow, Thomas, to Futorian Corp. Chair. 225,142, 11–21–72, Cl. D6—31.

Winrow, Thomas, to Futorian Corp. Loveseat. 225,145, 11–21–72, Cl. D6—63.

Yamamoto, Yasuaki, to Janome Sewing Machine Co., Ltd. Printing machine. 225,182, 11–21–72, Cl. D64—11.

Yeoh, Allan, to Louis Marx and Co. Inc. Toy vehicle. 225,168, 11–21–72, Cl. D34—15.

Zipp, David S. Front panel for vending machine. 225,176, 11–21–72, Cl. D52—3.

CLASSIFICATION OF PATENTS

ISSUED NOVEMBER 21, 1972

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	
163	3,703,007
237	3,703,008
CLASS 3	
1	3,703,009
CLASS 4	
216	3,703,010
CLASS 8	
39	3,703,350
116.3	3,703,351
128A	3,703,352
CLASS 9	
1A	3,703,011
8	3,703,012
310AA	3,703,013
CLASS 13	
9	3,703,600
27	3,703,601
CLASS 14	
16	3,703,014
CLASS 15	
104.3SN	3,703,015
246.5	3,703,016
250.02	3,703,017
250.42	3,703,018
256.51	3,703,019
CLASS 16	
31	3,703,020
126	3,703,683
CLASS 17	
47	3,703,021
53	3,703,022
CLASS 18	
26	3,703,348
CLASS 19	
240	3,703,023
CLASS 21	
2.5	3,703,587
58	3,703,353
CLASS 23	
230PC	3,703,355
254EF	3,703,356
CLASS 24	
68CD	3,703,024
CLASS 29	
33.2	3,703,026
39	3,703,027
157.3R	3,703,028
208D	3,703,029
252	3,703,030
446	3,703,025
469	3,703,031
493	3,703,032
624	3,703,033
	3,703,034
CLASS 30	
90.9	3,703,035
339	3,703,036
CLASS 32	
58	3,703,037
CLASS 33	
126.7R	3,703,038
CLASS 34	
174	3,703,039
CLASS 35	
5	3,703,040
35C	3,703,041
	3,703,602
CLASS 38	
69	3,703,042
77.83	3,703,043
CLASS 40	
2	3,703,044
152	3,703,045
CLASS 42	
94	3,703,046
CLASS 43	
43.15	3,703,047
CLASS 44	
63	3,703,360
80	3,703,361
CLASS 46	
47	3,703,049
148	3,703,048
CLASS 47	
34.11	3,703,050
58	3,703,051
CLASS 48	
215	3,703,052
CLASS 49	
428	3,703,053
CLASS 51	
165.91	3,703,054
219R	3,703,055
246	3,703,056
326	3,703,057
CLASS 52	
79	3,703,058
	3,703,558
177	3,703,059
475	3,703,061
545	3,703,062
727	3,703,063
CLASS 53	
122	3,703,064
197	3,703,065
296	3,703,066
374	3,703,067
CLASS 55	
21	3,703,068
337	3,703,069
526.5	3,703,070
CLASS 56	
226	3,703,060
295	3,703,071
330	3,703,072
CLASS 57	
36	3,703,073
58.95	3,703,074
157R	3,703,075
CLASS 60	
39.16	3,703,076
51	3,703,077
54	3,703,078
54.5E	3,703,079
219	3,703,080
226R	3,703,081
282	3,703,082
322	3,703,083
CLASS 61	
1F	3,703,084
60	3,703,085
CLASS 62	
209	3,703,086
262	3,703,087
430	3,703,088
CLASS 64	
32R	3,703,089
CLASS 65	
67	3,703,363
CLASS 66	
132R	3,703,090
CLASS 68	
23.1	3,703,091
CLASS 70	
248	3,703,092
CLASS 71	
29	3,703,364
86	3,703,365
CLASS 72	
342	3,703,093
389	3,703,094
CLASS 73	
80	3,703,095
151	3,703,096
159	3,703,097
231R	3,703,098
398AR	3,703,099
423R	3,703,100
432R	3,703,101
514	3,703,102
CLASS 74	
86	3,703,103
88	3,703,104
492	3,703,105
	3,703,106
695	3,703,107
713	3,703,108
866	3,703,109
868	3,703,110
CLASS 75	
74	3,703,366
157.5	3,703,367
175.5	3,703,368
206	3,703,369
CLASS 81	
57.34	3,703,111
CLASS 82	
2.5	3,703,112
30	3,703,113
CLASS 83	
3	3,703,114
12	3,703,115
17	3,703,116
542	3,703,118
677	3,703,117
806	3,703,196
CLASS 85	
67	3,703,119
83	3,703,120
CLASS 89	
1B	3,703,121
14C	3,703,122
40E	3,703,123
CLASS 90	
11R	3,703,124
CLASS 92	
85	3,703,125
186	3,703,126
CLASS 94	
48	3,703,127
50V	3,703,128
CLASS 95	
1.1	3,703,129
4.5R	3,703,137
	3,703,138
10CT	3,703,130
11L	3,703,131
11.5	3,703,132
12.5	3,703,133
13	3,703,134
36	3,703,135
42	3,703,136
CLASS 96	
1LY	3,703,370
1R	3,703,376
1.6	3,703,371
	3,703,372
28	3,703,373
36.1	3,703,374
38.2	3,703,362
100	3,703,375
108	3,703,584
122	3,703,377
CLASS 98	
1.5	3,703,139
40D	3,703,140
121R	3,703,141
CLASS 99	
1	3,703,378
81	3,703,379
91	3,703,380
169	3,703,382
171	3,703,383
174	3,703,384
233.8	3,703,200
589	3,703,199
CLASS 101	
382MV	3,703,142
470	3,703,143
CLASS 102	
24	3,703,144
70.2R	3,703,145
CLASS 105	
61.5	3,703,146
CLASS 106	
15	3,703,385
39R	3,703,386
46	3,703,387
47Q	3,703,389
47R	3,703,388
54	3,703,390
57	3,703,391
177	3,703,392
279	3,703,393
CLASS 108	
145	3,703,147
CLASS 112	
150	3,703,148
264	3,703,149
CLASS 114	
77R	3,703,153
197	3,703,150
230	3,703,151
CLASS 115	
34R	3,703,211
CLASS 116	
28R	3,703,152
CLASS 117	
5.1	3,703,394
17.5	3,703,395
21	3,703,396
33.5CP	3,703,401
36.2	3,703,397
	3,703,398
37LE	3,703,399
	3,703,400
37R	3,703,402
64C	3,703,403
72	3,703,404
107.2	3,703,405
118	3,703,406
131	3,703,407
136	3,703,409
	3,703,410
138.8B	3,703,588
138.8E	3,703,197
212	3,703,408
237	3,703,411
CLASS 118	
6	3,703,154
48	3,703,155
117	3,703,156
637	3,703,157
CLASS 119	
1	3,703,158
19	3,703,159
121	3,703,160
CLASS 122	
235R	3,703,161
CLASS 123	
8.09	3,703,163
32EA	3,703,162
119A	3,703,164
136	3,703,165
CLASS 126	
44	3,703,166
350R	3,703,167
CLASS 128	
2.06R	3,703,168
6	3,703,169
66	3,703,170
80C	3,703,171
188	3,703,172
194	3,703,173
214.4	3,703,174
284	3,703,175
395	3,703,176
CLASS 131	
2	3,703,177
173	3,703,179
CLASS 132	
88.7	3,703,180
CLASS 135	
1A	3,703,181
25	3,703,182
CLASS 136	
6	3,703,412
	3,703,413
30	3,703,414
83R	3,703,415
86R	3,703,416
134R	3,703,589
145	3,703,417
CLASS 137	
47	3,703,183
82	3,703,185
101	3,703,186
114	3,703,187
204	3,703,188
329.06	3,703,189
375	3,703,190
494	3,703,191
509	3,703,184
554	3,703,192
630	3,703,193
CLASS 138	
109	3,703,194
CLASS 139	
71	3,703,195
CLASS 144	
2R	3,703,198
CLASS 148	
6.14	3,703,418
6.16	3,703,419
175	3,703,420
CLASS 150	
.5	3,703,201
CLASS 152	
175	3,703,202
354	3,703,203
CLASS 156	
84	3,703,421
87	3,703,422
96	3,703,423
245	3,703,425
272	3,703,424
308	3,703,426
359	3,703,427
382	3,703,428
441.5	3,703,429
497	3,703,430
583	3,703,590
CLASS 161	
6	3,703,431
110	3,703,432
162	3,703,433
167	3,703,434
CLASS 162	
17	3,703,435
198	3,703,436
CLASS 164	
87	3,703,204
CLASS 165	
9	3,703,206
26	3,703,205
CLASS 166	
.5	3,703,207
247	3,703,208
CLASS 168	
18	3,703,209
CLASS 172	
784	3,703,210
CLASS 174	
68.5	3,703,603
75R	3,703,604
107	3,703,605
169	3,703,606
CLASS 175	
173	3,703,212
318	3,703,213
395	3,703,214
CLASS 176	
87	3,703,437
CLASS 179	
1SA	3,703,609
5P	3,703,607
6R	3,703,608
35	3,703,610
99	3,703,611
100.2E	3,703,612
CLASS 180	
43R	3,703,215
44R	3,703,216
99	3,703,217
CLASS 182	
6	3,703,218
46	3,703,219
223	3,703,220
CLASS 184	
6.27	3,703,221
6.5	3,703,178
CLASS 187	
29R	3,703,222
CLASS 188	
5	3,703,223
210	3,703,225
251M	3,703,224
CLASS 192	
48.91	3,703,226
84C	3,703,227
85R	3,703,228
CLASS 194	
10	3,703,229
CLASS 195	
1.8	3,703,438
29	3,703,439
31.5R	3,703,440
99	3,703,441
103.5R	3,703,591
CLASS 197	
52	3,703,230
CLASS 198	
33AD	3,703,232
165	3,703,231
220DC	3,703,233
CLASS 200	
11TW	3,703,613
50C	3,703,614
51.07	3,703,615
56R	3,703,616
61.5	3,703,617
148E	3,703,619
161	3,703,620
163	3,703,621
CLASS 201	
12	3,703,442
CLASS 202	
185B	3,703,592
190	3,703,443
CLASS 203	
78	3,703,444
CLASS 204	
11	3,703,450
15	3,703,445
23	3,703,446
37R	3,703,447
40	3,703,448
56R	3,703,449
106	3,703,451
129.1	3,703,452
151	3,703,453
159.21	3,703,454
181	3,703,455
192	3,703,456
	3,703,585
195P	3,703,457
198	3,703,458
300	3,703,459
327	3,703,460
CLASS 206	
78B	3,703,234
CLASS 208	
143	3,703,461
CLASS 209	
79	3,703,235
326	3,703,236
426	3,703,237
CLASS 210	
7	3,703,462
23	3,703,463
40	3,703,464
151	3,703,238
321	3,703,466
333	3,703,465
522	3,703,467

CLASSIFICATION OF PATENTS

CLASS 213	
57	3,703,239
CLASS 214	
152	3,703,241
302	3,703,242
394	3,703,243
517	3,703,244
CLASS 219	
75.5	3,703,622
137	3,703,623
229	3,703,624
CLASS 220	
40R	3,703,245
CLASS 222	
17	3,703,246
442	3,703,247
504	3,703,248
507	3,703,250
597	3,703,249
CLASS 226	
90	3,703,251
CLASS 228	
15	3,703,252
17	3,703,253
56	3,703,254
CLASS 229	
1.5B	3,703,255
39	3,703,256
CLASS 235	
61.11C	3,703,625
61.11G	3,703,627
61.11R	3,703,626
98	3,703,629
151.3	3,703,630
151.32	3,703,631
152	3,703,632
201PF	3,703,633
CLASS 236	
44	3,703,257
CLASS 239	
265.29	3,703,258
400	3,703,259
666	3,703,260
CLASS 240	
10.6CH	3,703,634
44.1	3,703,635
46.43	3,703,636
CLASS 242	
82	3,703,261
84.2A	3,703,262
129	3,703,264
129.8	3,703,263
CLASS 244	
13	3,703,265
52	3,703,266
83E	3,703,267
148	3,703,268
CLASS 248	
354L	3,703,269
475A	3,703,270
CLASS 249	
34	3,703,271
CLASS 250	
49.5PE	3,703,637
67	3,703,272
83.3H	3,703,639
83.6R	3,703,638
85R	3,703,618
199	3,703,640
218	3,703,641
CLASS 251	
122	3,703,273
CLASS 252	
77	3,703,468
89	3,703,469
99	3,703,470
107	3,703,471
	3,703,472
188.3	3,703,473
309	3,703,476
316	3,703,474
353	3,703,475
391	3,703,477
470	3,703,593
501	3,703,594
521	3,703,478
522	3,703,479
524	3,703,480
546	3,703,481
CLASS 260	
2A	3,703,483
2.3	3,703,488
2.5AC	3,703,484
2.5AH	3,703,486
	3,703,489
2.5AK	3,703,482
2.5FP	3,703,487
2.5P	3,703,485
23XA	3,703,490
23.7M	3,703,491
27EV	3,703,492
29.2N	3,703,493
29.3	3,703,494
29.6TA	3,703,596
30.6R	3,703,495
45.95R	3,703,586
47EC	3,703,496
47EN	3,703,497
75NK	3,703,498
77.5AT	3,703,499
78R	3,703,595
78.5R	3,703,501
79.5B	3,703,500
80.78	3,703,502
96.5T	3,703,503
139	3,703,504
	3,703,505
211.5R	3,703,506
	3,703,507
212	3,703,508
239A	3,703,512
239E	3,703,509
239.001	3,703,511
239.3D	3,703,510
240D	3,703,513
249.9	3,703,514
250R	3,703,515
256.4N	3,703,517
256.5R	3,703,516
268R	3,703,519
268T	3,703,520
288R	3,703,522
290HL	3,703,521
292	3,703,523
293.61	3,703,524
307B	3,703,526
307	3,703,527
308R	3,703,525
310B	3,703,528
326.5B	3,703,529
343.2R	3,703,532
346.6	3,703,530
348.6	3,703,531
384	3,703,533
397.4	3,703,534
401	3,703,535
462R	3,703,536
468B	3,703,537
482C	3,703,538
486R	3,703,539
490	3,703,540
494	3,703,541
500.5H	3,703,542
	3,703,543
501.17	3,703,544
513N	3,703,545
518A	3,703,546
520	3,703,597
524R	3,703,547
530N	3,703,548
533A	3,703,549
533N	3,703,550
	3,703,551
559S	3,703,552
561N	3,703,518
563R	3,703,553
575	3,703,598
583EE	3,703,554
601R	3,703,555
607A	3,703,556
619D	3,703,560
653.3	3,703,557
674A	3,703,559
683D	3,703,561
825	3,703,562
836	3,703,563
860	3,703,564
876B	3,703,565
878R	3,703,566
880B	3,703,567
890	3,703,568
CLASS 263	
30	3,703,274
32R	3,703,275
44	3,703,277
49	3,703,276
CLASS 264	
22	3,703,569
41	3,703,570
45	3,703,571
92	3,703,572
CLASS 266	
24	3,703,278
41	3,703,279
CLASS 270	
83	3,703,280
CLASS 271	
79	3,703,281
	3,703,282
88	3,703,283
CLASS 272	
69	3,703,284
CLASS 273	
25	3,703,285
26E	3,703,286
30	3,703,287
41	3,703,288
55R	3,703,289
72A	3,703,290
85R	3,703,291
97R	3,703,292
136C	3,703,293
191R	3,703,294
CLASS 274	
4G	3,703,295
CLASS 277	
25	3,703,296
166	3,703,297
CLASS 280	
6H	3,703,298
11.37E	3,703,299
150AB	3,703,300
438	3,703,301
CLASS 285	
161	3,703,302
382.7	3,703,303
CLASS 287	
20.92L	3,703,304
52.05	3,703,305
189.36R	3,703,307
189.365	3,703,306
CLASS 290	
43	3,703,642
CLASS 292	
216	3,703,308
CLASS 294	
86R	3,703,309
CLASS 296	
10	3,703,310
23R	3,703,311
CLASS 297	
35	3,703,312
391	3,703,313
CLASS 299	
31	3,703,314
34	3,703,315
39	3,703,316
CLASS 301	
6R	3,703,317
37R	3,703,318
CLASS 303	
21F	3,703,319
	3,703,320
CLASS 305	
38	3,703,321
CLASS 307	
52	3,703,643
64	3,703,644
154	3,703,645
237	3,703,647
293	3,703,648
	3,703,649
310	3,703,650
	3,703,651
CLASS 308	
122	3,703,322
CLASS 310	
8.3	3,703,652
24	3,703,653
47	3,703,646
77	3,703,654
CLASS 312	
7TV	3,703,323
279	3,703,324
307	3,703,325
330	3,703,326
CLASS 313	
85S	3,703,655
92LF	3,703,660
108D	3,703,656
109.5	3,703,657
113	3,703,658
CLASS 314	
86A	3,703,240
CLASS 315	
24	3,703,659
155	3,703,661
159	3,703,662
CLASS 317	
13R	3,703,663
20	3,703,664
61	3,703,665
234R	3,703,667
	3,703,668
234	3,703,666
235R	3,703,669
	3,703,670
	3,703,671
CLASS 318	
227	3,703,672
468	3,703,673
571	3,703,327
577	3,703,674
CLASS 320	
31	3,703,675
CLASS 321	
5	3,703,676
45R	3,703,677
CLASS 323	
9	3,703,679
19	3,703,678
101	3,703,680
CLASS 324	
43R	3,703,681
	3,703,682
CLASS 325	
31	3,703,684
373	3,703,685
CLASS 331	
11	3,703,686
94.5	3,703,687
CLASS 332	
1	3,703,688
CLASS 333	
82B	3,703,689
95S	3,703,690
CLASS 335	
20	3,703,691
61.11E	3,703,628
CLASS 336	
134	3,703,692
CLASS 337	
1	3,703,693
62	3,703,694
CLASS 338	
32R	3,703,695
35	3,703,696
	3,703,697
108	3,703,698
180	3,703,699
CLASS 339	
198R	3,703,700
221R	3,703,701
CLASS 340	
52R	3,703,702
63	3,703,703
64	3,703,704
146.1AL	3,703,705
146.1BA	3,703,706
172.5	3,703,707
	3,703,708
173FF	3,703,709
	3,703,710
	3,703,711
174TF	3,703,712
174.1C	3,703,713
224	3,703,714
240	3,703,715
244B	3,703,716
253Y	3,703,717
258D	3,703,718
347DD	3,703,719
381.5R	3,703,720
409	3,703,721
CLASS 343	
5PD	3,703,722
18D	3,703,723
CLASS 346	
108	3,703,724
CLASS 350	
3.5	3,703,328
150	3,703,329
157	3,703,330
160LC	3,703,331
160R	3,703,332
CLASS 352	
157	3,703,333
CLASS 355	
11	3,703,334
51	3,703,335
CLASS 356	
39	3,703,336
178	3,703,337
222	3,703,338
CLASS 415	
36	3,703,339
CLASS 416	
79	3,703,340
245	3,703,341
CLASS 417	
326	3,703,342
CLASS 418	
61	3,703,343
	3,703,344
CLASS 423	
24	3,703,573
284	3,703,359
407	3,703,354
462	3,703,574
611	3,703,357
657	3,703,358
CLASS 424	
27	3,703,575
35	3,703,576
45	3,703,577
49	3,703,578
54	3,703,583
128	3,703,579
180	3,703,580
217	3,703,599
263	3,703,581
266	3,703,582
CLASS 425	
4	3,703,345
46	3,703,346
67	3,703,347
CLASS 431	
202	3,703,349
CLASS 444	
1	3,703,725
	3,703,726
	3,703,727

CLASSIFICATION OF DESIGNS

D 2—	372	225,139
D 5—	4	225,140
D 6—	20	225,141
	31	225,142
	33	225,143
	39	225,144
	46	225,149
	63	225,145
	69	225,146
	71	225,147
		225,148
	152	225,150
	255	225,151
D 8—	150	225,152
	226	225,153
D 9—	48	225,154
	143	225,155
D11—	1	225,156
		225,157
D14—	3	225,158
		225,159
	6	225,160
D16—	1	225,161
	2	225,162
D26—	8	225,163
D29—	23	225,164
D34—	15	225,165
		225,166
		225,167
		225,168
D44—	10	225,169
	15	225,170
	21	225,171
D48—	20	225,172
D52—	1	225,173
		225,174
	2	225,175
	3	225,176
D54—	12	225,177
		225,178
D55—	1	225,179
D56—	9	225,180
D61—	1	225,181
D64—	11	225,182
D71—	1	225,183
D77—		225,184
D83—	12	225,185
D95—	3	225,186
D96—	12	225,187

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

60—	39.02	T904,023
71—	34	T904,033
96—	1.6	T904,032
	76	T904,028
	100	T904,034
		T904,035
	109	T904,022
	124	T904,026
117—	138.8UA	T904,025
156—	272	T904,019
204—	192	T904,020
250—	80	T904,018
260—	35A	T904,021
	45.85B	T904,024
	49	T904,027
	857TW	T904,029
307—	295	T904,030
423—	305	T904,031

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1
Alaska	2
American Samoa	3
Arizona	4
Arkansas	5
California	6
Canal Zone	7
Colorado	8
Connecticut	9
Delaware	10
District of Columbia	11
Florida	12
Georgia	13
Guam	14
Hawaii	15
Idaho	16
Illinois	17
Indiana	18
Iowa	19
Kansas	20
Kentucky	21
Louisiana	22
Maine	23
Maryland	24
Massachusetts	25
Michigan	26
Minnesota	27
Mississippi	28
Missouri	29
Montana	30
Nebraska	31
Nevada	32
New Hampshire	33
New Jersey	34
New Mexico	35
New York	36
North Carolina	37
North Dakota	38
Ohio	39
Oklahoma	40
Oregon	41
Pennsylvania	42
Puerto Rico	43
Rhode Island	44
South Carolina	45
South Dakota	46
Tennessee	47
Texas	48
Utah	49
Vermont	50
Virginia	51
Virgin Islands	52
Washington	53
West Virginia	54
Wisconsin	55
Wyoming	56
U.S. Air Force	57
U.S. Army	58
U.S. Navy	59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,703,364
3,703,597
4 : 3,703,239
3,703,267
3,703,289
3,703,366
3,703,669
6 : 3,703,013
3,703,032
3,703,036
3,703,040
3,703,049
3,703,050
3,703,058
3,703,101
3,703,102
3,703,135
3,703,143
3,703,144
3,703,151
3,703,155
3,703,160
3,703,161
3,703,176
3,703,181
3,703,207
3,703,208
3,703,213
3,703,255
3,703,284
3,703,290
3,703,306
3,703,307
3,703,316
3,703,355
3,703,357
3,703,404
3,703,412
3,703,413
3,703,414
3,703,417
3,703,422
3,703,425
3,703,437
3,703,443
3,703,446
3,703,458
3,703,460
3,703,461
3,703,463
3,703,464

3,703,468
3,703,532
3,703,558
3,703,573
3,703,591
3,703,603
3,703,615
3,703,625
3,703,626
3,703,641
3,703,650
3,703,654
3,703,694
3,703,699
3,703,707
3,703,718
3,703,721
3,703,724
8 : 3,703,119
3,703,166
3,703,299
9 : 3,703,018
3,703,148
3,703,359
3,703,520
10 : 3,703,380
3,703,575
12 : 3,703,022
3,703,037
3,703,138
3,703,150
3,703,216
3,703,231
3,703,554
3,703,587
3,703,642
3,703,684
13 : 3,703,069
3,703,261
3,703,356
3,703,382
3,703,617
16 : 3,703,038
3,703,210
17 : 3,703,007
3,703,030
3,703,033
3,703,052
3,703,061
3,703,071
3,703,088

3,703,124
3,703,156
3,703,205
3,703,225
3,703,232
3,703,282
3,703,312
3,703,323
3,703,340
3,703,370
3,703,427
3,703,431
3,703,455
3,703,462
3,703,471
3,703,488
3,703,536
3,703,578
3,703,646
3,703,648
3,703,660
3,703,663
3,703,703
3,703,715
3,703,717
3,703,725
18 : 3,703,008
3,703,020
3,703,062
3,703,077
3,703,108
3,703,131
3,703,219
3,703,223
3,703,233
3,703,240
3,703,274
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19 : 3,703,021
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3,703,241
3,703,679
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21 : 3,703,142
3,703,391
3,703,497
3,703,501
22 : 3,703,096
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24 : 3,703,066
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3,703,211
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3,703,682
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26 : 3,703,010
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3,703,152
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27 : 3,703,262
3,703,379
3,703,697
28 : 3,703,243
29 : 3,703,220
3,703,292
3,703,393
33 : 3,703,433
3,703,435
34 : 3,703,042
3,703,080
3,703,098
3,703,137
3,703,146
3,703,194
3,703,222
3,703,234
3,703,246
3,703,328
3,703,329
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3,703,410
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35 : 3,703,209
36 : 3,703,011
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3,703,133
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3,703,157
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3,703,272
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3,703,293
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3,703,415
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3,703,472
3,703,478
3,703,489
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3,703,584
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3,703,696
3,703,705
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3,703,723
3,703,726
37 : 3,703,012
3,703,116
3,703,170
3,703,670
39 : 3,703,017
3,703,027
3,703,029

3,703,044
3,703,059
3,703,067
3,703,112
3,703,125
3,703,173
3,703,189
3,703,201
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3,703,276
3,703,317
3,703,343
3,703,363
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3,703,475
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41 : 3,703,009
3,703,321
3,703,368
42 : 3,703,064
3,703,171
3,703,183
3,703,188
3,703,204
3,703,236
3,703,302
3,703,339
3,703,349
3,703,378
3,703,401
3,703,419
3,703,445
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3,703,498
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3,703,719
44 : 3,703,117
45 : 3,703,073
3,703,154
3,703,175
3,703,351
3,703,499
46 : 3,703,681
47 : 3,703,347
48 : 3,703,015
3,703,094
3,703,104
3,703,185
3,703,187
3,703,193
3,703,264
3,703,301
3,703,311
3,703,408
3,703,476

3,703,495
3,703,504
3,703,505
3,703,538
3,703,545
3,703,551
3,703,593
3,703,609
3,703,628
3,703,635
3,703,645
49 : 3,703,167
50 : 3,703,122
51 : 3,703,177
3,703,198
3,703,353
3,703,429
3,703,565
52 : 3,703,060
53 : 3,703,097
3,703,271
3,703,314
3,703,622
55 : 3,703,016
3,703,024
3,703,172
3,703,174
3,703,257
3,703,260
3,703,300
3,703,326
3,703,383
3,703,384
3,703,421
3,703,636
3,703,653

DESIGN PATENTS

6 : 225,143
225,150
225,152
225,153
225,172
225,176
225,181

225,187
12 : 225,154
17 : 225,142
225,145
225,184
18 : 225,144
225,147

225,148
225,159
19 : 225,160
225,183
24 : 225,167
25 : 225,171
26 : 225,141

225,162
27 : 225,169
225,177
29 : 225,161
34 : 225,164
225,178

225,179
225,185
36 : 225,151
225,165
225,166
37 : 225,140

38 : 225,155
40 : 225,158
44 : 225,170
45 : 225,156
225,157
53 : 225,180

DEFENSIVE PUBLICATIONS APPLICATIONS

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8 : T904,030

9 : T904,020
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34 : T904,025
36 : T904,018
T904,022

T904,024
T904,026
T904,028

T904,032
T904,034

T904,035
48 : T904,019

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE
November 28, 1972 Volume 904 Number 4

CONTENTS

Page

Patents and Trademark Notices

Availability of Certain Abandoned Applications for Inspection and Copying 456
Registration to Practice 456
Patent Suits 456

Patent Notices

Certificates of Correction for the Week of November 28, 1972 458
Condition of Patent Applications 459
Reissue Patents Granted 460

Patents Granted

General and Mechanical 462
Chemical 551
Electrical 597
Design Patents Granted 631
Index of Patentees . . . . PI 1
Indices of Reissues and Designs . . . . PI 24

Classification of

Patents (Including Reissues) . . . . PI 27
Designs . . . . PI 29

Geographical Index of Residence of Inventors

Patents (Including Reissues) . . . . PI 30
Designs . . . . PI 31

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PATENT OFFICE NOTICES

Availability of Certain Abandoned Applications for Inspection and Copying

Pursuant to settlement of litigation with the United States, the Department of Health, Education, and Welfare announces that the following abandoned patent applications relating to Compositions for Limiting Dehydration and Fatigue During Periods of Physical Exertion are available for inspection and copying by any member of the public :

Serial Number 130,780, filed Apr. 2, 1971 ;
Serial Number 707,750, filed Feb. 23, 1968 ; and
Serial Number 644,318, filed June 7, 1967.

NORMAN J. LATKER,
Chief, Patent Branch.

Oct. 30, 1972.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office either on the basis of 4 years or more service in the Examining Corps or under Rule 341(e) of the "Rules of Practice of the United States Patent Office in Patent Cases."

Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before December 22, 1972.

Hart, H. Roger, McCarthy & McCarthy, Toronto-Dominion Centre, P.O. Box 48, Toronto 111, Ontario, Canada
Jones, Owen J., Carver & Co., 1662 W. Eighth Ave., Vancouver 9, British Columbia, Canada
Miller, Paul R., Craig & Antonelli, 909 Watergate Office Bldg., Washington, D.C. 20037
Nielsen, Andres H., 2390 Cedar Lane, Vienna, Va. 22180
Rothenberg, Jeff, Xerox Corp., Crystal Mall Bldg. 1, 1911 Jefferson Davis Hwy., Arlington, Va. 22202

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Patent Suits

Notices under 35 U.S.C. 290 ; Patent Act of 1952

2,463,280, Kaehni and Kaehni, SPECTROSCOPE GRATING HAVING SPACED ZONES OF DIFFRACTION LINES, **filed** Apr. 23, 1969, D.C. Md. (Baltimore), Doc. 20693–C, *Frank J. Kaehni and Marie Kaehni* v. *Diffraction Company.* Judgment, patent not infringed, June 6, 1972.

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3,147,906, H. I. Roccaforte, PLATFORM CARTON, **filed** June 14, 1971, D.C., E.D. Mich. (Detroit), Doc. 36652, *Riegel Paper Corp.* v. *Ex-Cello Corp.* Consent judgment for permanent injunction, May 5, 1972.

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3,158,424, J. W. Maston, RETENTION SYSTEM FOR ELECTRICAL CONTACTS ; **3,165,369**, R. Bowen, CONTACT MOUNTING, **filed** Mar. 14, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c653, *Bunker-Ramo Corporation* v. *International Telephone & Telegraph Corporation.* Voluntary dismissal pursuant to Rule 41(a) (1) (1), May 31, 1972.

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3,592,022
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3,595,614
3,598,338
3,600,416
3,604,821
3,604,982
3,605,761
3,608,068
3,609,005
3,609,109
3,613,201
3,613,571
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3,616,191
3,616,375
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3,622,548
3,622,797
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3,627,717
3,627,735
3,627,821
3,628,921
3,629,692
3,630,240
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3,630,980
3,631,012
3,631,591
3,631,722
3,631,802
3,633,713
3,634,039
3,634,374
3,634,612
3,634,669
3,634,995
3,636,264
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3,637,145
3,638,025
3,638,178
3,639,465
3,639,538
3,640,351
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3,642,816
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3,645,514
3,645,655
3,647,121
3,647,413
3,647,569
3,648,796
3,649,014
3,652,003
3,652,930
3,653,445
3,654,340
3,654,417
3,655,391
3,655,444
3,655,534
3,655,768
3,655,829
3,655,921
3,656,005
3,656,454
3,657,189
3,657,508
3,657,957
3,658,838
3,658,839
3,658,852
3,658,862
3,659,473
3,659,476
3,659,916
3,660,391
3,660,421
3,660,428
3,660,513
3,660,540
3,660,986
3,661,284
3,661,846
3,661,865
3,661,898
3,661,957
3,662,318
3,663,484
3,663,664
3,664,456
3,664,458
3,664,745
3,664,778
3,665,180
3,666,714
3,666,776
3,666,817
3,667,004
3,667,716
3,669,065
3,669,613
3,669,622
3,669,911
3,670,176
3,670,308
3,670,858
3,671,382
3,671,550
3,672,579
3,672,918
3,675,248
3,676,149
3,676,345
3,676,517

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 14, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries, Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	8-19-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-05-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-09-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	8-31-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—Director (Vacant) Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-01-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	3-22-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	10-18-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-13-71
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—Director (Vacant) Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-21-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-18-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director Industrial Arts: Household, Personal and Fine Arts.	4-07-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-30-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	9-01-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	10-27-71
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	12-13-71
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-15-71

Expiration of patents: The patents within the range of numbers indicated below expire during December 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,725,558 to 2,728,912, inclusive
Plant Patents	Numbers 1,436 to 1,441, inclusive

REISSUES

NOVEMBER 28, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,522

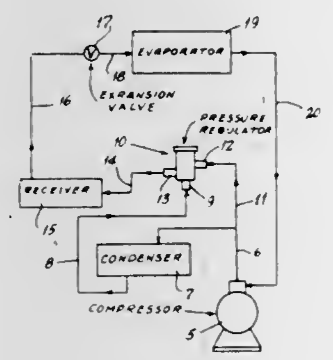
SYSTEM FOR MAINTAINING PRESSURE IN REFRIGERATION SYSTEMS

John A. Schenk and Ralph B. Tilney, St. Louis, Mo., assignors to Emerson Electric Co.

Original No. 2,986,899, dated June 6, 1961, Ser. No. 704,665, Dec. 23, 1957. Application for reissue Nov. 12, 1969, Ser. No. 871,499

Int. Cl. F25b *41/00*

U.S. Cl. 62—196 **5 Claims**



A refrigeration system with a bypass around the condenser, and a three-way valve to control refrigerant flow to (or from) the condenser and through the bypass, comprising a unitary pressure regulated valve member operable between opposite valve ports, and moved in response to pressure upstream of the expansion device to throttle flow through the condenser when that pressure is too low and at the same time to enlarge flow through the bypass. When the pressure is higher, the valve modulates to reduce flow through the bypass and increase flow through the condenser.

27,523

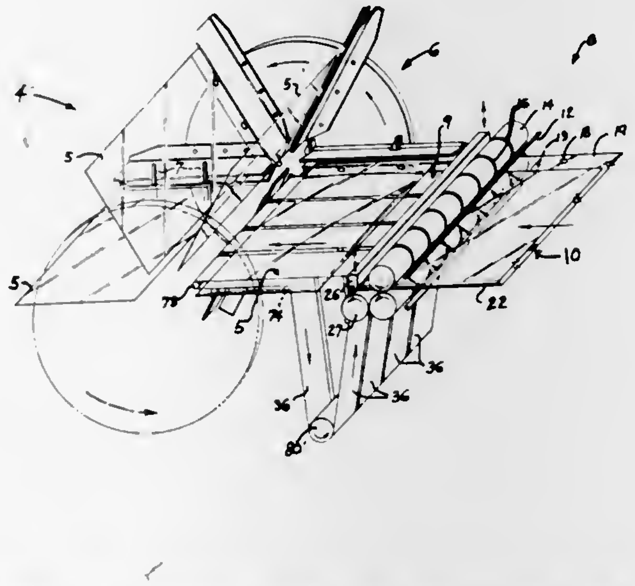
MACHINE FOR AUTOMATICALLY PLACING BAGS ON A WICKET

Lawrence Maccherone, Emerson, N.J., assignor to FMC Corporation, San Jose, Calif.

Original No. 3,462,026, dated Aug. 19, 1969, Ser. No. 633,126, Apr. 24, 1967. Application for reissue Mar. 20, 1970, Ser. No. 21,557

Int. Cl. B65g *57/03, 57/08*

U.S. Cl. 214—8 **15 Claims**



Machine for automatically placing bags with mounting holes on a wicket is adapted for use at the output of a high-speed bag production line. The machine comprises a revolving carriage having clamping means adapted to grasp the bag and to revolve the bag over to a position adjacent to the wicket with the mounting holes exposed and positioned to engage the legs of the wicket. A conveyor adjacent to the revolving carriage brings the bags from the output of the production line to the carriage. As the carriage revolves, actuating means close the clamping mechanism near the conveyor for grasping the bag near the mounting holes with these holes exposed, and as the carriage continues to revolve the actuating means releases the clamping means after the bags have been individually engaged on the wicket. The revolving movement serves advantageously to cool the regions of the bag which were heat sealed to form the bag in the production line.

27,524

ENZYMATIC DETERMINATION OF NITROGEN-CONTAINING COMPOUNDS AND ENZYMES REACTIVE THEREWITH

Richard G. Nadeau, Claymont, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original No. 3,485,723, dated Dec. 23, 1969, Ser. No. 502,596, Oct. 22, 1965. Application for reissue Jan. 4, 1971, Ser. No. 103,931

Int. Cl. C12d *13/00*

U.S. Cl. 195—103.5 **20 Claims**

A process for measuring the amount of a nitrogen-containing compound in a sample or the amount of an enzyme in a sample, the enzyme being reactive with a nitrogen-containing compound, which involves (1) mixing the sample with a compound that is enzymatically reactive with ammonia; (2) adding to the nitrogen-containing compound in the sample an amount of the enzyme or adding to the enzyme a non-rate limiting amount of a nitrogen-containing compound to release ammonia, in either case, at a measurable rate; and (3) measuring the rate of reaction of ammonia with the compound that is reactive with ammonia, this rate of reaction being proportional to the concentration of the nitrogen-containing compound or the concentration of the enzyme, as the case may be, in the original sample.

27,525

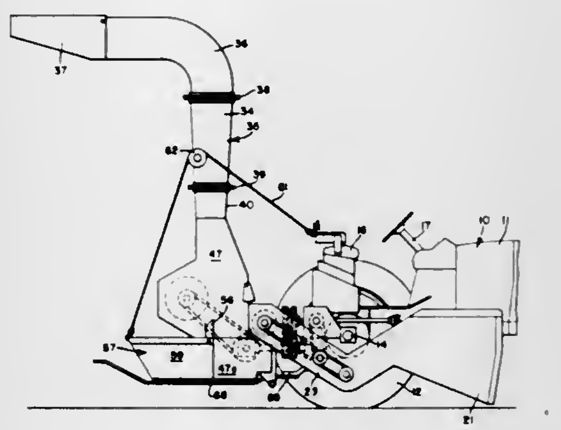
COTTON HARVESTER

Leon Franklin Sanderson, Des Moines, Iowa, Myron L. McCunn, Horicon, Wis., and Richard Wayne Hook, Des Moines, Iowa, assignors to Deere & Company, Moline, Ill.

Original No. 3,397,522, dated Aug. 20, 1968, Ser. No. 469,484, July 6, 1965. Application for reissue Feb. 3, 1970, Ser. No. 10,668

Int. Cl. A01d *45/20*

U.S. Cl. 56—30 **25 Claims**



A material conveying and separating structure for use on a cotton harvester that includes a chamber that receives a mixture of ripe and green bolls from a cotton harvester, a blower duct extending vertically from the chamber and with a blower directing air through the duct, and a communication duct that extends between the chamber and blower duct that operates to induce or draw the ripe bolls from the chamber.

27,526

METHOD AND DEVICE FOR DETERMINING THE CONVEY CONCENTRATION OF DREDGING SPOIL OF A SUSPENSION OF DREDGING SPOIL AND WATER

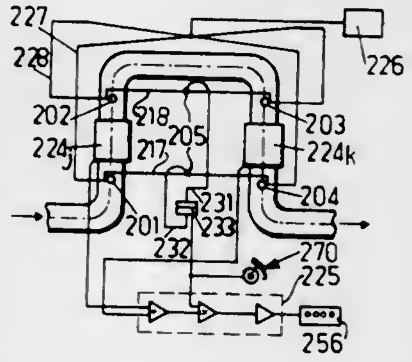
Romke van der Veen, Jutphaas, Netherlands, assignor to N.V. Ingenieursbureau Voor Systemen en Octrooien "Spanstaal," Rotterdam, Netherlands

Original No. 3,554,011, dated Jan. 12, 1971, Ser. No. 817,999, Apr. 21, 1969. Application for reissue July 19, 1971, Ser. No. 164,155

Claims priority, application Netherlands, Apr. 24, 1968, 6805779

Int. Cl. G01n *9/26, 15/06*

U.S. Cl. 73—61 R **8 Claims**



A system for measuring the concentration of a dredging spoil suspension wherein the suspension is caused to flow vertically upwards and vertically downwards in two pipe sections. Upper and lower conduits are coupled between corresponding upper and lower points on the two vertical pipe sections, and a pressure pickup is obtained between the midpoints of the upper and lower conduit.

27,527

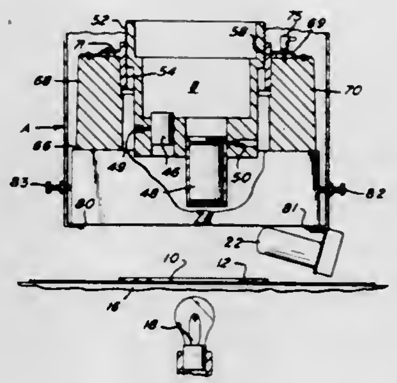
PHOTOGRAPHIC PRINTING APPARATUS FOR MAKING PLURAL ASSORTED-SIZED PRINTS SIMULTANEOUSLY

Arthur J. Daugherty, Kansas City, Mo., assignor to Film Corporation of America, Philadelphia, Pa.

Original No. 3,401,594, dated Sept. 17, 1968, Ser. No. 510,852, Dec. 1, 1965. Application for reissue Dec. 8, 1969, Ser. No. 888,184

Int. Cl. G03b *27/44*

U.S. Cl. 355—46 **8 Claims**



Interchangeable lens cells for photographic printing apparatus to project plural assorted-sized prints simultaneously from single frames of various film sizes. Each cell includes a plurality of a first set of object lenses of a particular focal length mounted in a first plane and at least one objective lens of a second focal length mounted in a second plane parallel to and displaced from the first plane.

27,528

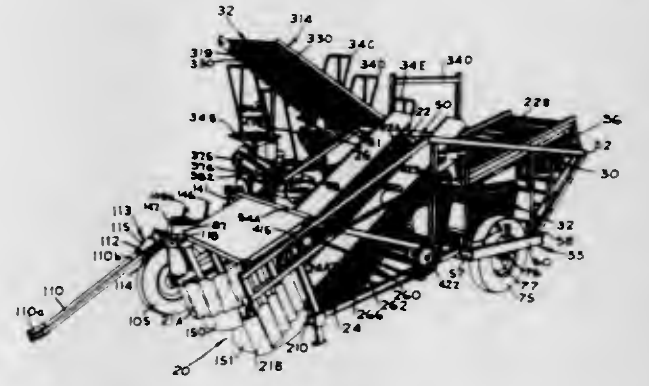
METHOD OF AND APPARATUS FOR HARVESTING VINE CROPS

Olin L. Looker, Stockland, and Edwin F. Greedy, Hoopeston, Ill., assignors to FMC Corporation, San Jose, Calif.

Original No. 3,301,331, dated Jan. 31, 1967, Ser. No. 415,633, Dec. 3, 1964, which is a continuation of Ser. No. 127,199, July 27, 1961. Application for reissue Dec. 2, 1970, Ser. No. 94,636

Int. Cl. A01d *17/04*

U.S. Cl. 171—1 **26 Claims**



[1. A method of harvesting a vine crop which includes vines growing in a row and fruit both loose on the ground around the vines and fruit attached to the vines comprising the steps of; severing vines underground and scooping up dirt, severed vines and their attached friut, as well as loose fruit lying on the ground, whereby severed vines, attached fruit and loose fruit constitute a mass of scooped-up material, conveying said mass through a separating stage where loose fruit and dirt are separated from said mass, and shaking said vines subsequently to said separating stage thereby separating said attached fruit from the vines, said loose fruit being separated from said mass before said shaking step so as not to subject said loose fruit to said shaking step.]

PATENTS

GRANTED NOVEMBER 28, 1972

GENERAL AND MECHANICAL

3,703,728

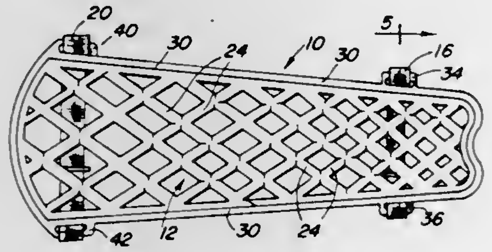
ARM GUARD FOR ARCHER

Thomas Allen Saunders, and Eugene F. Saunders, both of Columbus, Nebr., assignors to Saunders Archery Co., Columbus, Nebr.

Filed Aug. 27, 1971, Ser. No. 175,554

Int. Cl. A41d *13/08*

U.S. Cl. 2—16 **5 Claims**



A light-weight lattice-like shield including integrally formed loops for receiving adjustable, flexible and elastically extensible bands for securement of the shield to the forearm of an archer, thereby to serve as a protective arm guard

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3,703,729

TROUSERS WITH ADJUSTABLE WAIST

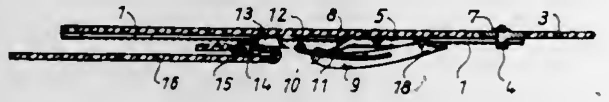
Rolf Hinderer, Nagold, Germany, assignor to Rolf Hinderer Gmb, Nagold, Germany

Filed July 12, 1971, Ser. No. 161,654

Claims priority, application Germany, Sept. 26, 1970, G 70 35 712.9; March 25, 1971, P 21 14 407.0

Int. Cl. A41d *1/06*

U.S. Cl. 2—237 **9 Claims**



In a pair of trousers having slits in the sides thereof extending through the waistband, and closures for holding flap portions of the waistband at each slit in adjustable, overlapping relationship, each closure includes a guide strip on which two slides are movable guided. A first slide carries a clamping lever equipped with a cam for locking engagement with the strip and a pivoted handle which, in its operative position, holds the clamping lever in locking engagement with the strip and conceals the first slide from view. The legs of a U-shaped link are hinged to the handle, and the bight portion of the link is hinged to the second slide which is fastened to one of the two flap portions, the strip being fastened to the other flap portion.

3,703,730

INTERLINING

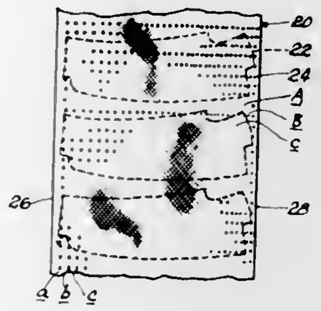
Samuel E. Miller, Winnetka, Ill., assignor to Quick Service Textiles, Inc., Chicago, Ill.

Filed Sept. 27, 1971, Ser. No. 183,972

Int. Cl. A41d *27/02*

U.S. Cl. 2—272 **7 Claims**

Textile interlinings having a stiffening function of the type comprising a fabric sub-strate carrying a myriad of closely spaced dots, usually of a fusible substance, e.g. a thermoplastic resin, whereby the interlining may be reliably secured to an adjacent fabric layer by application of heat and/or pressure. The invention relates to an improved arrangement of dots having a proportioned relation to the desired stiffness of the laminated sub-strate and interlining in selected area.



3,703,731

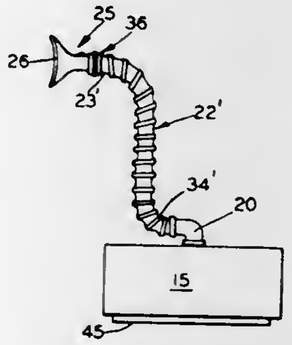
PORTABLE URINAL

Florence E. Leiser, 1 Marshall Street, Irvington, N.J.

Filed Jan. 11, 1971, Ser. No. 105,224

Int. Cl. E03d *13/00*

U.S. Cl. 4—110 **2 Claims**



A portable urinal consists of a container having an inlet means near its top, and an extendable and retractable hose with one end attached to the inlet. A funnel-type application, designed to be held in the hand and having a forward portion shaped to fit the body against which it is applied, is connected to the other end of the hose for draining the urine into the container. A closure is provided at the applicator end. Also, a carrying case is provided in which pivot means in its bottom permits rotation of the container and winding of the hose therein.

3,703,732

INCINERATOR

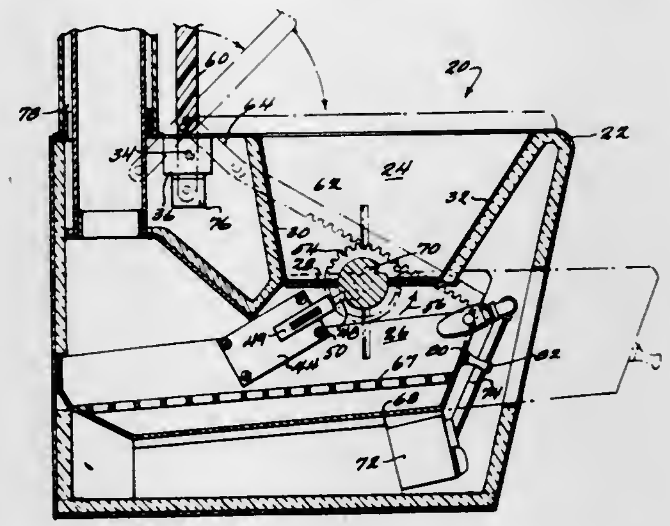
Clifford L. Green, 4296 South 3425 West, Granger, Utah

Filed June 10, 1971, Ser. No. 151,875

Int. Cl. A41k *11/02*

U.S. Cl. 4—131 **4 Claims**

A combustion toilet for incinerating human waste with a lower incinerating chamber and an upper chamber which receives the waste and is closed by a lid. The waste falls on a butterfly valve which is mounted between the two chambers and is mechanically linked to the lid so as to deposit the waste into the lower chamber when the lid is closed. A mercury switch is mounted for rotation with the valve so as to be electrically closed when the lid is closed and is electrically connected to a manually actuable timer and gas valve so that the gas valve admits gas, such as propane, butane or natural gas, into the lower chamber to incinerate the waste only while the mercury switch is closed and the timer remains actuated.



Preferably, a solenoid is provided to prevent closing the lid until the timer is actuated, as well as a heat sensor mounted outside the lower chamber for cutting off gas flow whenever the sensed temperature exceeds predetermined limits.

3,703,733

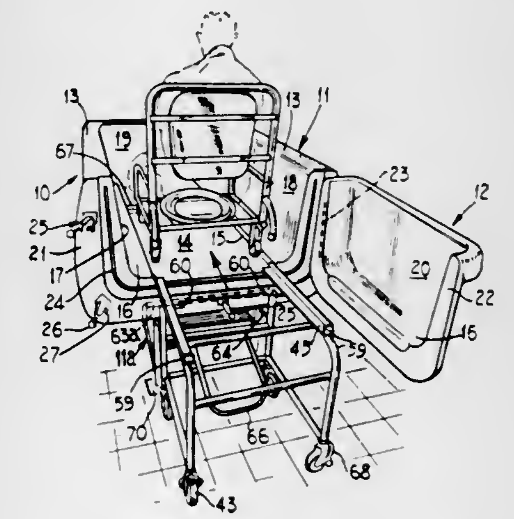
BATH ARRANGEMENTS

George McLoughlin, Lee Cottage, Thrum Hill Lane, Rochdale, England

Filed Dec. 21, 1970, Ser. No. 99,875

Int. Cl. A47k *3/12*

U.S. Cl. 4—185 L **10 Claims**



In a bath and chair arrangement especially for the infirm, the bath has an end door and the chair arrangement can be locked to the bath and an upper portion having a seat can be rolled through the open door into the bath. The lower portion is then removed and the door closed for washing of the patient.

3,703,734

ELEVATED AND CONFINED FLOOR AREA APPARATUS FOR THE CARE OF INVALIDS AND SMALL CHILDREN

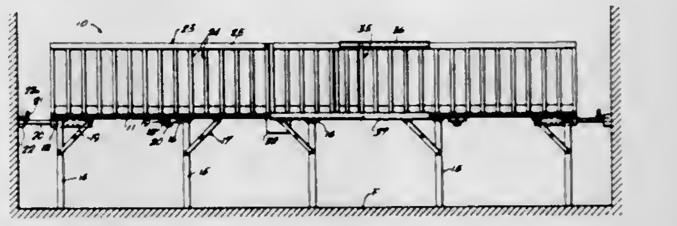
Lottie Mae Carr, P. O. Box 41362, Miami, Fla.

Filed Ma:ch 26, 1971, Ser. No. 128,261

Int. Cl. A47s *9/00;* **A47c** *27/08*

U.S. Cl. 5—99 R **5 Claims**

A modulate elevated floor apparatus for erection is any size room with a peripheral walkway for the purpose of attending infants, small children or invalids without ending over to room floor level, is described. A peripheral guard fence and rail confines children or invalids being cared for to the elevated floor area. Trap door means is provided in the elevated flooring to permit an attendant access to a central zone of the elevated flooring to attend to matters that cannot be reached from the peripheral walkway. Means is also provided for sub-dividing the elevated floor area into crib-like compartments for separately confining infants or small children whenever necessary or desirable.



3,703,735

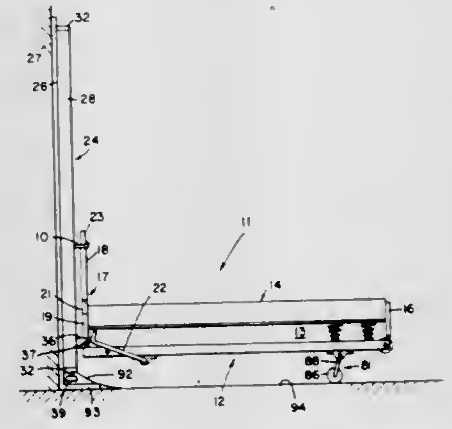
RETRACTING BED MECHANISM

Stephen G. Moore, 461 Nevada, Palo Alto, Calif.

Continuation-in-part of Ser. No. 29,899, April 20, 1970, abandoned. This application Sept. 2, 1970, Ser. No. 68,846

Int. Cl. A47c *19/06*

U.S. Cl. 5—147 **7 Claims**



Mechanism for shifting a bed between horizontal and upright positions includes a pair of spaced apart vertical lift means coupled to opposite sides of an adjacent end of the bed and means for fastening the mattress to the headboard. Operation of the lift means draws the bed to a fully vertical position with the bed being between the lift means and being flat against a wall. Support structure for the remote end of the bed includes rollers on pivoting legs which swing into alignment with the bed as the vertical position is approached and which swing outward as the bed is lowered. Continued lowering of the bed causes the legs to pivot past a perpendicular position whereby the legs are inclined when the bed is fully lowered and contact a stop to securely support the remote end without requiring any manual manipulations thereat.

3,703,736

ANCHORING DEVICE FOR BUOYANT LIFE SAVING EQUIPMENT

William York Higgs, Gibsons, British Columbia, Canada, assignor to Star Lifeline Limited, North Vancouver, British Columbia, Canada

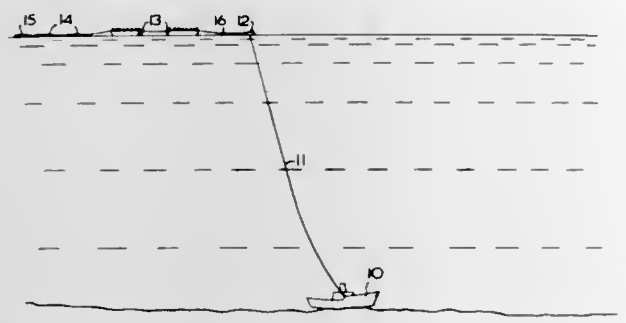
Filed June 18, 1970, Ser. No. 47,312

Claims priority, application Canada, Oct. 16, 1969, 65,037

Int. Cl. B63b *21/52*

U.S. Cl. 9—9 **11 Claims**

This invention is concerned with life saving equipment. The instant characteristics of many vessels has led to loss of life. In accordance with the invention a buoy is provided with mooring means for securing buoyant life saving equipment to the buoy. The buoy is mounted on a vessel and is secured to it by a securing line which is wound on a cable drum permitting the line to pay out and the buoy to surface when the vessel sinks. The vessel provides an anchor for the buoy and hence the life saving equipment to prevent its dispersal.



3,703,737

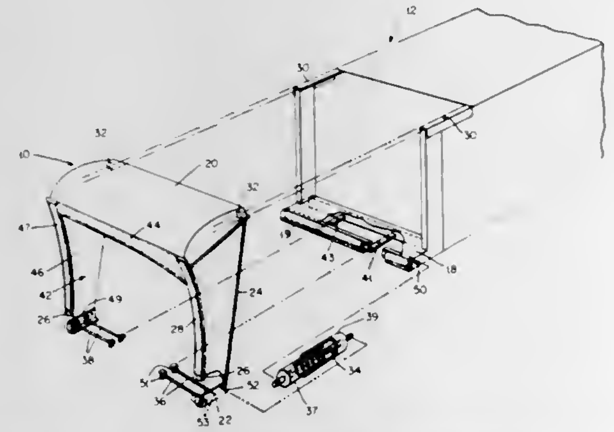
CANOPY APPARATUS

Walter S. Eggert, Jr., Huntingdon Valley, Pa., assignor to Boothe Airside Services, Inc.

Filed May 24, 1971, Ser. No. 146,337

Int. Cl. B65g *11/00*

U.S. Cl. 14—71 **6 Claims**



A canopy for closing a gap between a gangway with a walkway and an aircraft includes a top and two side portions adapted to be movably mounted to the gangway. The forward portions of the canopy are flexible to conform to the shape of the aircraft after the walkway comes into physical engagement with the aircraft.

3,703,738

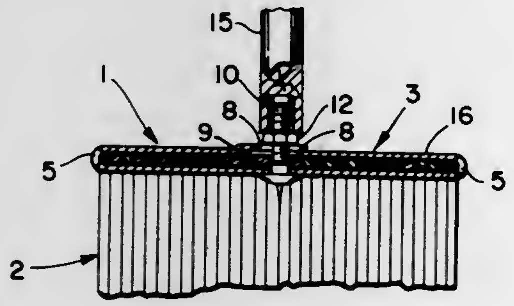
MOP WITH METAL HEADBAND

Theron V. Moss, 3175 Falmouth Road, Shaker Heights, Ohio, and Theron C. Moss, P.O. Box 234, Cleveland, Tenn.

Filed March 16, 1971, Ser. No. 124,884

Int. Cl. A47l *13/24, 13/502*

U.S. Cl. 15—229 A **9 Claims**



A mop with metal headband formed from a single strip of metal bent to shape around the mop cords intermediate the ends thereof. One end of the metal strip is outwardly offset relative to the other end to permit overlapping of the ends on one side of the headband while still maintaining tight engagement between the headband and mop cords across the entire width of the headband. Aligned slots in the overlapping ends of the metal strip and aperture in the other side of the headband permit ready insertion of a bolt through the headband for firmly clamping the mop cords between the headband, and the bolt also provides an effective means for securing a mop handle to the headband.

3,703,739

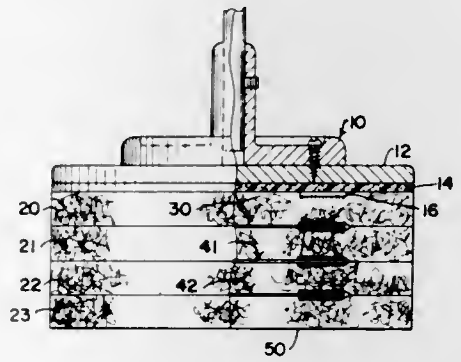
MULTIPLE LAYER SURFACE WORKING PADS

Edward G. Young, Gloucester, Mass., and Howard W. Heggem, Glen Ellyn, Ill., assignors to Beatrice Foods Co., Chicago, Ill.

Filed March 2, 1971, Ser. No. 120,137

Int. Cl. A47l *11/40;* **B24d** *11/00;* **B32b** *7/06*

U.S. Cl. 15—230.17 **4 Claims**



Surface working pads formed of open non-woven three-dimensional web material, as typified by the so-called nylon floor pads, are releasably retained on a driving disc or brush block in a stack in which adjacent pads are held together by double face, flexible, pad holding material providing a multitude of projecting tiny adhering filaments. In a preferred embodiment the double faced pad holding material is attached to a sheet carrier.

3,703,740

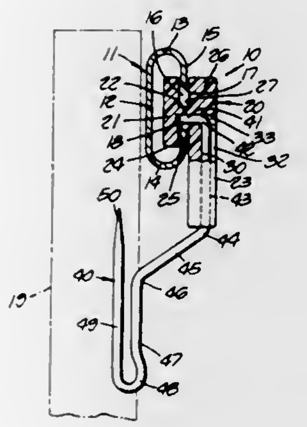
DRAPERY CARRIER DEVICE

Sam Mann, Sherman Oaks, Calif., and Ben Mankofsky, 13753 Chandler Blvd., Van Nuys, Calif., assignors to said Mankofsky, by said Mann

Filed Aug. 3, 1970, Ser. No. 60,231

Int. Cl. E05d *13/02;* **A47h** *13/00*

U.S. Cl. 16—87.2 **9 Claims**



A drapery carrier device for vertically supporting draperies and the like from a traverse rod includes a body member and a hook member. The body member includes a retainer portion which is integrally connected to the upper end of a pendant portion by a shank. The body member is adapted to be slidably mounted on the traverse rod with the retainer portion extending into an elongated slot in the rod and the hook member which is adapted to engage and vertically carry the hem portion of the draperies is rigidly secured to the pendant portion.

3,703,741

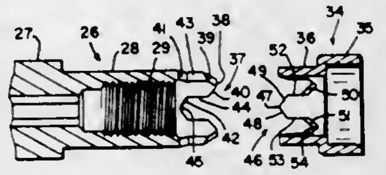
TORQUE RESISTING AXLE ASSEMBLY

John R. Foster, and Larry R. Hunt, both of Indianapolis, Ind., assignors to Von Duprin, Inc., Indianapolis, Ind.

Filed April 21, 1971, Ser. No. 135,909

Int. Cl. A47b *95/02*

U.S. Cl. 16—112 **7 Claims**



An axle assembly particularly for an oscillable element, consisting of a headed spool having a threaded bore opening through its unheaded end, a headed screw having a threaded shank receivable in the spool bore, and a shroud having a head portion enshrouding the screw head and a shank portion loosely sleeved on the screw shank between the screw head and its threads and having an outer diameter equal to that of the spool, the mating ends of the spool and shroud being formed for non-rotational interengagement so that the spool and the screw will be protected against relative rotary movement as a result of the operation of the oscillable element.

3,703,742

PLASTIC HINGE

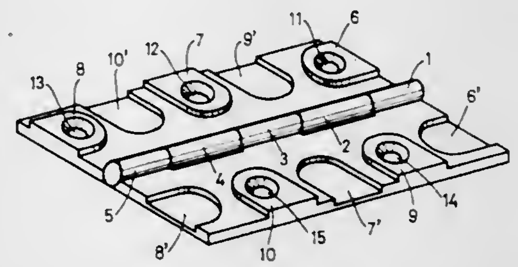
Mikio Konishi, Higashiyamaku, Japan, assignor to New Lite Industry Company Limited, Higashiyama, Ku, Kyoto, Japan

Filed Oct. 5, 1970, Ser. No. 78,063

Claims priority, application Japan, Apr. 13, 1970, 45/35656

Int. Cl. E05d *9/00*

U.S. Cl. 16—128 **6 Claims**



This invention relates to a plastic hinge provided with the holes for fixing on the right and left fixed plates at the places asymmetrical to each other respectively, whereby making it possible to firmly fix the hinge again by means of using the right and left fixed plates conversely to each other in case of strain being caused.

3,703,743

METHOD AND MEANS FOR RESTRAINING ANIMALS

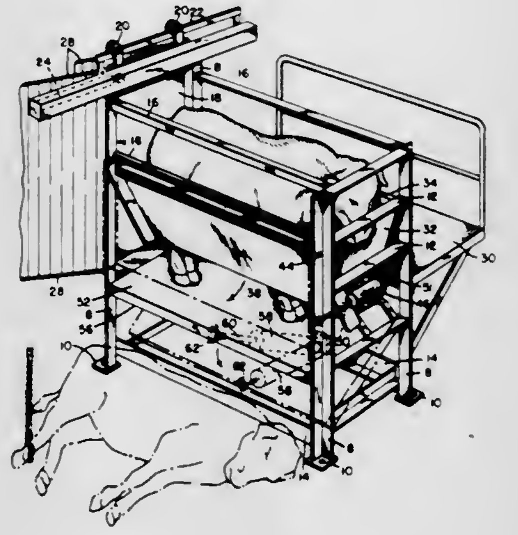
Carl Oscar Schmidt, Jr., Cincinnati, Ohio, assignor to The Cincinnati Butchers' Supply Company, Cincinnati, Ohio

Filed Nov. 27, 1970, Ser. No. 93,160

Int. Cl. A22b *1/00*

U.S. Cl. 17—1 A **21 Claims**

A meat animal on foot enters the restrainer on a normally stationary horizontal floor hinged along one side edge. A retractable sloping side wall moves to support the belly; the floor drops to immobilize the animal for stunning then upon retraction of the side wall the animal slides down the now inclined floor in proper position for leg shackling and hoisting to a bleeding conveyor. The device is also ideally suited for use by veterinarians in handling animals.



3,703,744

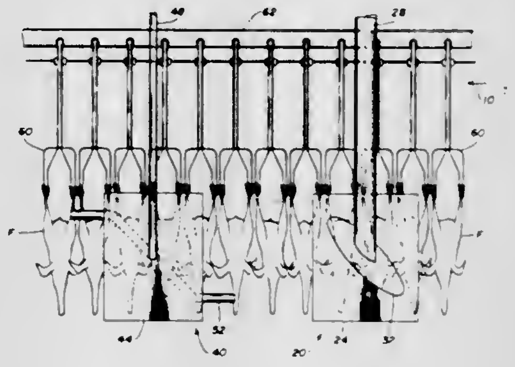
FOWL SINGEING SYSTEM

Janus J. Dillon, Irving, Tex., assignor to Food Equipment, Inc., Dallas, Tex.

Filed Jan. 13, 1971, Ser. No. 106,110

Int. Cl. A22c *21/04*

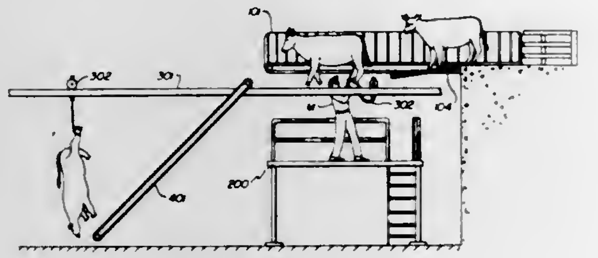
U.S. Cl. 17—11 **9 Claims**



The specification discloses a fowl singeing system including first and second housings disposed in the path of fowl transported by a shackle system. A blast of ambient air is directed upon the fowl during passage through the first housing. A plurality of gas nozzles are supported on opposite sides of the second housing and are connected to a source of flammable gas in order to direct jets of flame therefrom upon ignition. A plurality of gas nozzles are spaced apart along a line slanted to the horizontal, wherein jets of flame cover substantially the entire body of each fowl transported through the second housing. The ends of the gas jet nozzles are laterally spaced at varying distances from the second housing in general correspondence with the shape of the fowls being transported therepast.

3,703,745
METHOD FOR PREPARING ANIMALS FOR SLAUGHTER

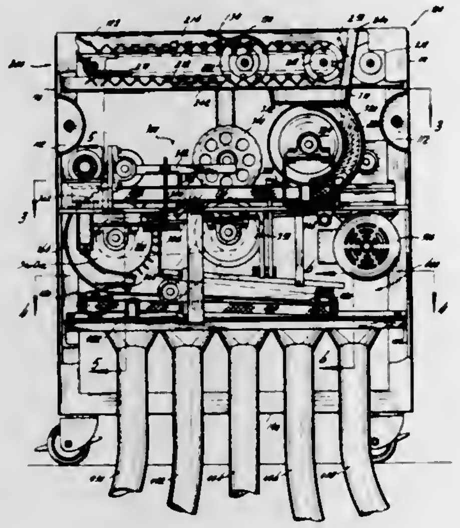
Everett Edwards, 1519 Deerwood Drive, South St. Paul, Minn.
Division of Ser. No. 764,773, Oct. 3, 1968, Pat. No. 3,599,276.
This application Jan. 15, 1971, Ser. No. 106,699
Int. Cl. A22b *5/02*
U.S. Cl. 17—45 **3 Claims**



A method for preparing meat animals for slaughter in which the animals are confined in an elevated bottomless pen, stunned and shackled while in the pen, and discharged directly to a conveyor rail for slaughter.

3,703,746
APPARATUS FOR PROCESSING SHRIMP AND RELATED SHELLFISH

John M. Jones, Jr., 206 Grubb Street, Hertford, N.C.
Filed Feb. 26, 1971, Ser. No. 119,206
Int. Cl. A22c *29/00*
U.S. Cl. 17—71 **11 Claims**

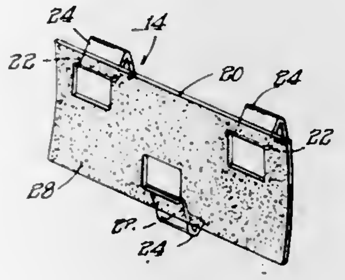


This apparatus is designed to take shrimp and related shellfish which have been freshly caught from the ocean and seas and process them on board a trawler whereby they may be immediately preserved in edible form. The apparatus includes a means for setting individual shellfish to excise the heads thereof, sequentially orienting the deheaded shellfish for conveyance to and through a deveining step, and sequentially deshelling the shellfish and thereafter grading them for storage.

3,703,747
MOLDING CLIP

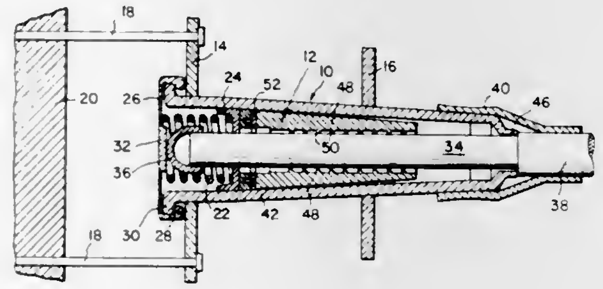
Denver C. Hamman, Evanston, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Dec. 9, 1970, Ser. No. 96,455
Int. Cl. A41b *19/00*
U.S. Cl. 24—73 HS **7 Claims**

The present invention relates generally to spring clips for securing molding strips and the like upon a supporting workpiece, and more particularly to molding clips which may be adhesively secured to said work surface. Molding clips disclosed in the drawings of this application includes a plate section having an outer surface conforming substantially with the contour of the work surface to which the clip is to be attached. Laterally yieldable fingers are formed integral with and extend from said plate section, the free extremities of said fingers providing oppositely disposed shoulders for accommodating complementary oppositely disposed flanges of a molding strip. The area of integral connection of each finger with plate section is spaced laterally of the margin of the plate section adjacent the shoulder of the finger. Adhesive means associated with the mounting surfaces of the plate section is employed to secure the clip device to a supporting work surface.



3,703,748
ANCHOR FOR POST-TENSIONING PRESTRESSED CONCRETE

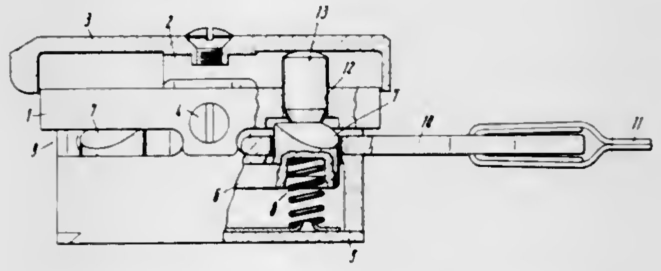
William F. Kelly, New Orleans, La., assignor to Kelly Systems, Inc., New Orleans, La.
Filed Aug. 14, 1970, Ser. No. 63,805The portion of the term of this patent subsequent to Aug. 18, 1988, has been disclaimed.
Int. Cl. F16g *11/00*
U.S. Cl. 24—126 9 Claims



This invention is an anchor for post-tensioning prestressed concrete including a case having a central bore through which a tendon passes, the internal wall of the case defining the central bore being tapered in a manner to form a compound angle with respect to the longitudinal axis of the case. A chuck comprising chuck segments is positioned within, and movable longitudinally with respect to, the case, the inner faces of the chuck segments being provided with a series of teeth engageable with the outer surface of the tendon which passes through the case and chuck. The compound angles of the case offers relief to the forward portion of the chuck segments in order to better distribute the forces exerted by the chuck segments on the tendon over the length thereof. Variations in the compound angles and/or the chuck segments permit use of the anchor for either locking engagement with a tendon or nonlocking engagement therewith when anchor releasing is desired.

3,703,749
CENTRAL STRAP LOCK, ESPECIALLY FOR BODY HARNESS EQUIPMENT FOR PARACHUTE JUMPERS

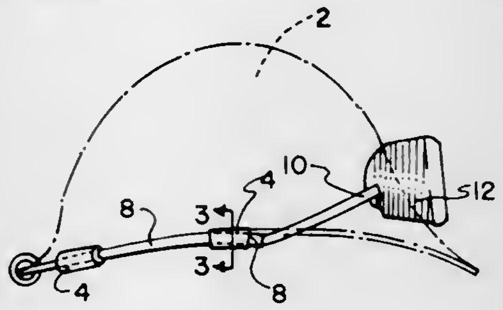
Peter Pfabe, Hamburg, Germany, assignor to Autoflug GmbH, Egenbuttel, Germany
Filed Sept. 1, 1971, Ser. No. 177,041
Claims priority, application Germany, Sept. 3, 1970, P 20 43 634.4
Int. Cl. A47b *19/00*
U.S. Cl. 24—205.17 **9 Claims**



A central strap lock, especially for parachutists, in which the parachute straps converging to a central area of the lock can all but one quickly be released from the lock by depressing an actuating member, e.g. in the form of a rotatable disc, which can register with at least two circular positions, while a holding member in axial alignment with one of the anchor bolts for receiving the ends of the straps retains contact with said one anchor bolt to positively prevent separation of the respective strap from the said one anchor bolt when the anchor bolt support is depressed.

3,703,750
MEANS FOR ATTACHING GOGGLES TO HELMETS

Charles B. Irwin, Jr., 9119 Northfield Road, Ellicott City, Md.
Filed Aug. 11, 1971, Ser. No. 170,763
Int. Cl. A61f *9/06*
U.S. Cl. 24—265 R **3 Claims**

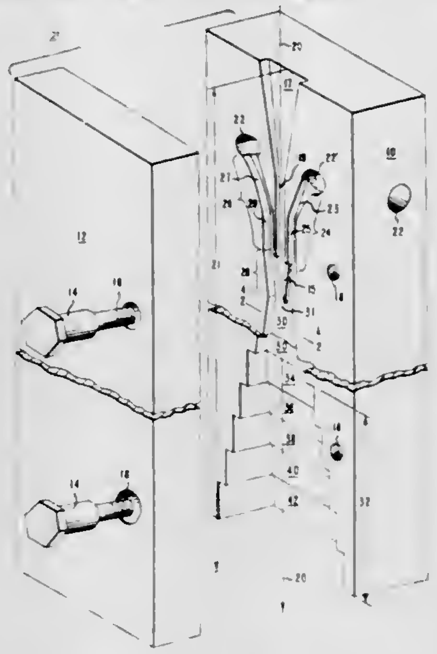


The goggle supporting means is an arrangement to attach the goggles to the lower lip of the helmet by providing a plurality of spring clips having means associated with each of the clips for supporting a flexible tube through which an elastic band attached to the goggles may freely move.

3,703,751
YARN TREATING JET

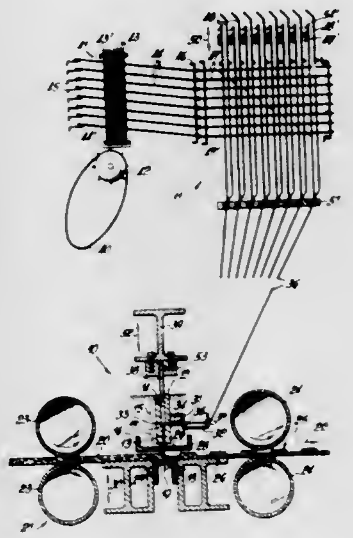
William W. Bowen, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed July 27, 1971, Ser. No. 166,469
Int. Cl. D02g *1/16*
U.S. Cl. 28—1.4 **1 Claim**

A yarn treating jet comprising a body member and a cover clamped together. There is a longitudinal passage recessed in the surface of the body that is contiguous with the cover with two opposed fluid conduits in communication with the passage for supplying treating fluid to yarn passing through the passage. The passage includes successively, a tapered length, a straight length of one depth and a converging throat region of a greater depth. The opposed fluid conduits enter the throat region at the parallel to the longitudinal axis of the passage. This passage arrangement along with a raised tapered land extending centrally through the throat region, provides a smooth acceleration of the fluid as it meets the threadline to avoid undue buffeting of the threadline in the jet passage and formation of neps.



3,703,752
APPARATUS FOR MAKING A PATTERN ON A FIBROUS WEB

Alfons Schulte, Bocholt/Westfalen, Germany, assignor to Firma Johann Borgers KG, Bocholt/Westfalen, Germany
Filed Oct. 26, 1970, Ser. No. 84,062
Claims priority, application Germany, Oct. 24, 1969, P 19 53 494.2
Int. Cl. D04h *18/00*
U.S. Cl. 28—4 R **13 Claims**

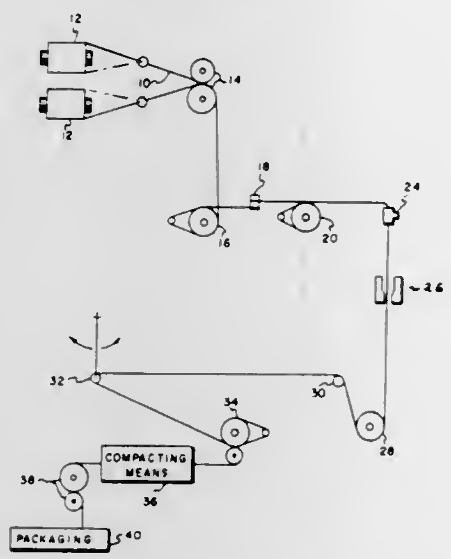


A web is transported on a table crossed by a needle holder bar in which a row of needles is mounted for movement between retracted and advanced positions. Selected needles of the row are locked in the advanced position by control means of the Jacquard machine type. When the table with the web is moved toward the needles, the selected locked needles penetrate the web, forming depressed portions in the same, while the non-selected freely movable needles are pushed back by the web to retracted positions. After each step of the web, a row of depressed and non-depressed portions is formed so that the depressed portions form a depressed pattern on the web.

If the web has two layers of different colors, fibers of the depressed portions of one layer are pushed through the other layer and form a colored pattern on the face of the same.

3,703,753
METHOD FOR PRODUCING A BULKED YARN AND APPARATUS THEREFOR

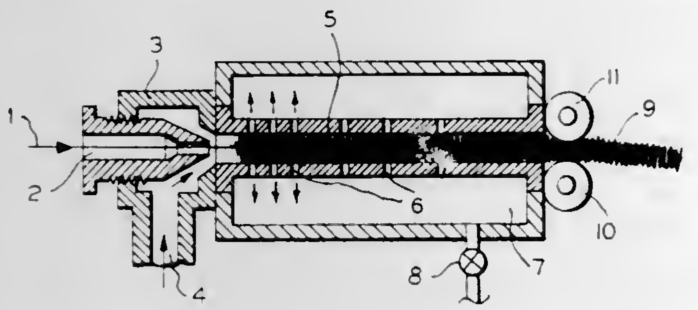
Jack C. Binford; Frederick A. Ethridge, and James R. Talbot, all of Charlotte, N.C., assignors to Fiber Industries, Inc.
Continuation-in-part of Ser. No. 848,549, Aug. 8, 1969, Pat. No. 3,654,677. This application May 5, 1971, Ser. No. 140,393. The portion of the term of this patent subsequent to April 11, 1989, has been disclaimed.
Int. Cl. D02g *1/16*
U.S. Cl. 28—72.12 **14 Claims**



A method for producing a yarn having latent bulking characteristics and the apparatus therefor is described. The yarn is composed of multifilament synthetic fibers which have been crimped and subjected to a constant tensioning process. The process involves subjecting a drawn yarn, preferably freshly drawn, to a crimping process which can be any of a number of crimping methods including stuffer box crimping, gear crimping, steam jet crimping and the like. The yarn emerges from the crimping step under a low, substantially uniform tension, is tensioned under a higher constant tension to at least partially extend the crimps, is entangled or twisted and then taken up on a package. The bulk characteristics of the yarn are preferably developed after incorporation into the end product such as a carpet by subjection to heat and moisture.

3,703,754
PROCESS FOR PRODUCING TEXTURED THERMOPLASTIC YARNS

Charles Blanc, St-Romain au Mont D'Or, and Jean Joly, Brindas, both of France, assignors to Societe Rhodiaceta, Lyon, France
Filed July 21, 1970, Ser. No. 56,880
Claims priority, application France, July 24, 1969, 6925777
Int. Cl. D02g *1/12*
U.S. Cl. 28—72.14 **4 Claims**

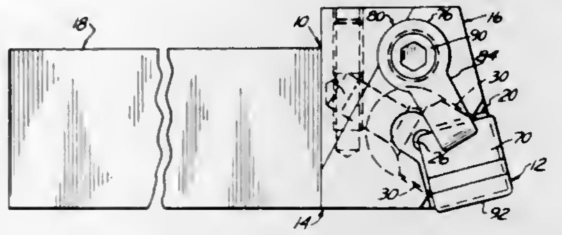


An improved process for the production of springy, textured thermoplastic yarns wherein the yarns are compacted and compressed in an enclosed space by means of a flow of compressed fluid heated at a temperature that allows for the fixing of the yarn, a portion of the fluid affecting the movement of the yarn and another portion escaping to the side from the enclosed space, such process being characterized in that the escape of fluid is effected at a pressure which is lower than the feed pressure, but higher than atmospheric pressure.

The apparatus for effecting such process comprises a suction nozzle constituting a passage for the yarn and a delivery tube for admission of pressurized fluid, a tubular chamber communicating with the nozzle, and having orifices therein, a housing defining a closed space enclosing at least a portion of the length of the tubular chamber and having a pressure regulation system associated therewith, and means for controlling the discharge of the treated yarn.

3,703,755
ADJUSTABLE TOOL HOLDER FOR PRECISELY REPOSITIONING REGROUND CUTTER INSERTS

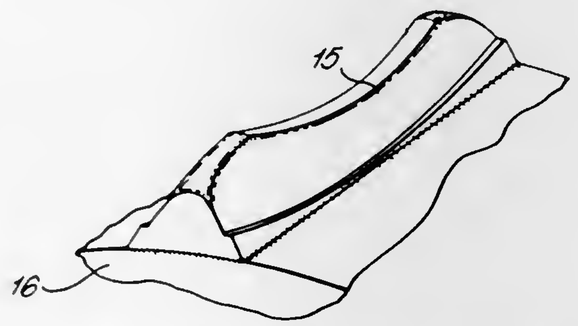
Oscar M. Guensche, Grosse Pointe Park, Mich., assignor to Dawson Carbide Industries, East Detroit, Mich.
Filed Sept. 4, 1970, Ser. No. 69,551
Int. Cl. B26d *1/00*
U.S. Cl. 29—96 **3 Claims**



This tool holder replaces the conventional cutter insert tool holder in the use of reground cutter inserts. It moves forward to the original and intended position the reground cutting edge of the hard cutter insert which has been reduced to a substandard size by such regrinding. In it, an insert locator in the form of a slide or plunger propelled by a fine adjustment screw engages the reground cutter insert and moves it precisely across the supporting surface of a shim seat mounted in the cutter insert recess of the tool holder, whereupon the reground and thus repositioned insert is secured in its relocated position by a screw-actuated clamp engaging a clip breaker which in turn engages the cutter insert.

3,703,756
METHOD OF PRODUCING WORMWHEELS

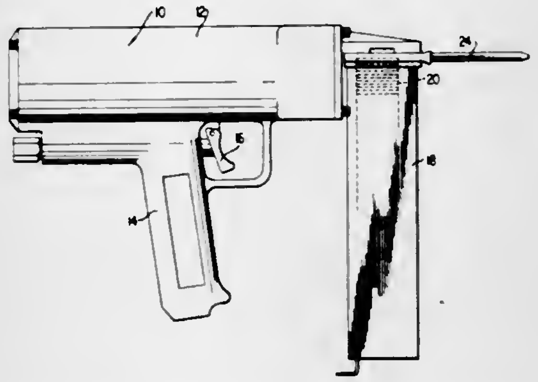
Walter T. Chesters, Huddersfield, England, assignor to David Brown Gear Industries Limited
Filed Jan. 20, 1970, Ser. No. 4,326
Claims priority, application Great Britain, Jan. 22, 1969, 3,659/69
Int. Cl. B21d *53/28;* **B23p** *15/14;* **B21h** *5/00;* **B29d** *15/00;* **B21k** *1/30*
U.S. Cl. 29—159.2 **4 Claims**



A wormwheel comprises a hub to which is welded or glued either a thin rim of another material in which are then formed conventional tooth gaps of a depth equal to or greater than the thickness of the rim, or individual helically disposed strips of another material which are subsequently formed into conventional teeth.

3,703,757
FASTENING DEVICE

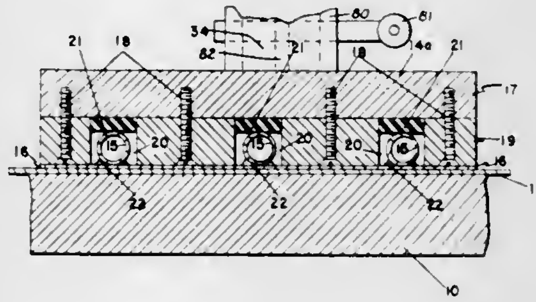
James H. Backus, 3320 Franconia Road, Alexandria, Va.
Filed Dec. 8, 1970, Ser. No. 96,129
Int. Cl. B23p *19/00;* **B23q** *7/10;* **B23p** *11/00*
U.S. Cl. 29—200 P **3 Claims**



A fastener driving machine featuring conventional means for propelling the fasteners, for example, staples, in combination with a novel guiding system comprising a pair of arms provided with longitudinal grooves along which the fasteners travel and adjustable anvil means mounted for predetermined movement in relation to the arms and including curvilinear surfaces against which the fasteners strike causing the ends thereof to bend backward in securing relation, the fastener driving machine designed particularly for use in the construction of ferro-cement marine hulls wherein groupings or wires forming the framework thereof must be fastened together at preselected points.

3,703,758
APPARATUS FOR SECURING AN ELONGATED METAL MEMBER TO A FLAT METAL SHEET

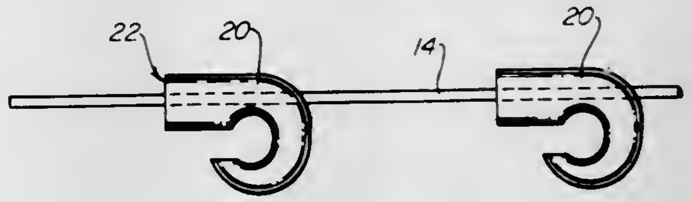
Edward G. Beck, Jr., Fort Thomas, Ky., assignor to Airtex Corporation, Chicago, Ill.
Division of Ser. No. 673,138, Oct. 5, 1967, Pat. No. 3,514,834, which is a continuation-in-part of Ser. No. 523,619, Jan. 28, 1966. This application March 9, 1970, Ser. No. 17,566
Int. Cl. B23p *15/16*
U.S. Cl. 29—202 **4 Claims**



A method of securing metallic tubing and the like to a flat metal sheet while maintaining the flatness of the sheet so that the composite tube and sheet may be used as radiant heating or cooling panels in building interiors where distortion or wrinkling of the flat sheet would be undesirable. The apparatus comprises a heating station where a composite of sheet, of suitably disposed bonding material, and a piece of tubing in properly assembled relationship and under pressure are heated to induce a bond between the tubing and the sheet while maintaining the sheet in flat condition. An assembly station is provided including a jig in which the piece of tubing may be accurately located, means for accurately locating the jig with respect to the sheet, and means for raising and lowering the jig and for releasing the jig from the raising and lowering means so that it may move with the assembly from the assembly station to the heating station. After the heating cycle, the assembly moves to a cooling station (which may be the same as the assembly station) for a cooling cycle. A combined assembly and cooling station may be provided on each side of the heating station, each assembly station having a jig whereby production may be speeded up.

3,703,759
CONTINUOUS METHOD OF FORMING TWO-PART TRAVELERS

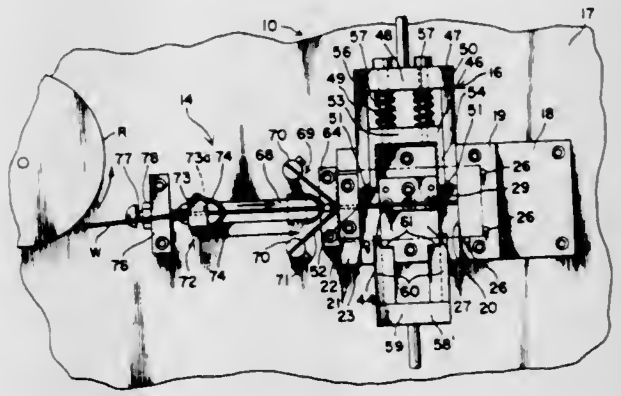
Andrew J. Wayson, Needham, and John T. O'Connelly, Medfield, both of Mass., assignors to Merriman, Inc., Hingham, Mass.
Filed May 20, 1971, Ser. No. 145,161
Int. Cl. B23p *17/00*
U.S. Cl. 29—417 **8 Claims**



A two-part traveler is fabricated continuously by molding discontinuous synthetic plastic running portions on a single wire. The wire is severed intermediate successive running portions and preferable adjacent to one running portion. The portion of the wire projecting from the opposite side is shaped by means of a wire forming machine to form the traveler in a continuous rapid manner.

3,703,760
MACHINE AND METHOD FOR CARD MOUNTING SHANKED BUTTONS

Edwin B. Pommer, Port Washington, N.Y., assignor to B. Blumenthal & Co., Inc., New York, N.Y.
Filed Feb. 12, 1971, Ser. No. 115,025
Int. Cl. B23p *19/04*
U.S. Cl. 29—433 **22 Claims**



An apparatus for securing buttons having fastening eyes to a mounting card, the button eyes projecting through the card, which apparatus includes a jig having longitudinally spaced wells for receiving the eyes of buttons carried by the card positioned on the jig, and a narrower open-topped passageway traversing the jig across the wells and having tapered trailing ends. A feed mechanism advances a length of wire from a source thereof along the passageway and through the eyes, and shaping and severing members at opposite ends of the jig, which either reciprocate or oscillate, which sever the length of wire from the source and bend the ends thereof projecting beyond the end wells 180°. The card is then lifted, the fastening wire passing freely through the top of the passageway.

3,703,761

METHOD OF ASSEMBLING ELASTIC COUPLING

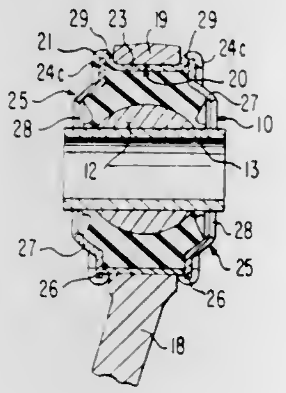
Frederick H. Van Winsen, Kircheim/Teck, and Hans-Karl Daur, Stuttgart-Bad Cannstatt, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Division of Ser. No. 601,624, Dec. 14, 1966, Pat. No. 3,501,184. This application Sept. 12, 1969, Ser. No. 871,066

Claims priority, application Germany, Dec. 14, 1965, D 48 905 X11/47a

Int. Cl. B23p *19/00*

U.S. Cl. 29—436 **6 Claims**



The present disclosure relates to an elastic coupling and a method for its construction wherein the elastic coupling includes an annular rigid outer member, a rigid inner member, an annular elastic intermediate member and side members. The inner, outer and intermediate members are constructed and assembled so that there is substantially no stressing of the intermediate elastic member. Thereafter, the side members are axially forced together to axially compress the elastic member and expand the elastic member into engagement with both the inner and outer members. At least one of the members is radially deformed to hold the side members in their axially displaced positions to produce a final assembly. The outer member may comprise a rigid ring and a plurality of arcuate sections of sheet metal having outward deformation axially engaging the ring at opposite axial ends to prevent relative axial movement; also, the arcuate sections being provided with outer portions that may be deformed inwardly to axially engage the side members after assembly and stressing of the elastic member. The outer member and adjacent surface of the elastic member may have cylindrical bearing surfaces. The inner member and the adjacent bearing surface of the intermediate elastic member may have engaging spherical surfaces. Furthermore, the side members may have spherical portions corresponding to the adjacent spherical portions of the inner member with the elastic member therein. The radial deformations between the arcuate sections and the ring of the outer member may be either formed simultaneously with the formation of the deformations engaging the side members or they may be preformed prior to the assembly of the outer member.

3,703,762

METHOD OF ALIGNING FORMS

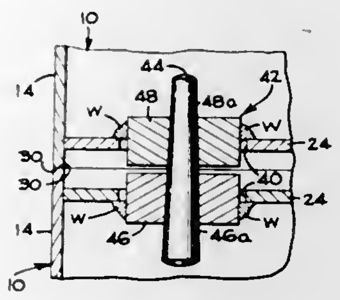
Willard M. Lind, Lakeland, Fla., assignor to FMC Corporation, San Jose, Calif.

Division of Ser. No. 742,095, July 2, 1968, Pat. No. 3,603,557. This application April 12, 1971, Ser. No. 132,949

Int. Cl. B23q *3/00*

U.S. Cl. 29—464 **5 Claims**

Concrete form sections are made ready for easy subsequent alignment by cutting aligned holes in the opposed end bulkheads of the sections to be aligned and placing between the sections and within the holes alignment devices each of which consist of a set of two apertured plugs which are received upon and snugly engaged with a tapered pin. Each plug of a set is welded to one of the opposing bulkheads and the pin is then removed to permit the form sections to be separated. When the sections are subsequently aligned at the concrete pouring site, each pin is hammered back into snug engagement with its associated pair of plugs.



3,703,763

METHOD OF MAKING A COMPOSITE METAL ARTICLE

Currie B. Berry, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

Filed Nov. 18, 1970, Ser. No. 90,876

Int. Cl. B23k *31/02, 35/12*

U.S. Cl. 29—503 **12 Claims**

A method of making a composite article wherein a foamed aluminum article is bonded or brazed to a sheet aluminum article. Foamed aluminum and sheet aluminum are each pre-wet with molten zinc by abrading the materials or subjecting them to ultrasonic vibrations while submerged in molten zinc. The wetted metal surfaces are then brought together and the zinc melted and resolidified.

3,703,764

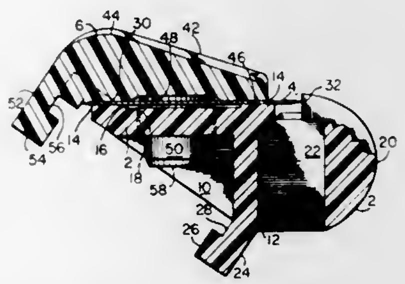
RAZOR BLADE ASSEMBLY

Roger L. Perry, Lynnfield Center, Mass., assignor to The Gillette Company, Boston, Mass.

Filed March 15, 1971, Ser. No. 124,217

Int. Cl. B26b *21/06, 21/52*

U.S. Cl. 30—32 **8 Claims**



A razor blade assembly comprising razor blade means clamped between a platform member and a cap member. The platform and cap members are provided with dowel and aperture means by which they are connected together with the blade means held therebetween in assembled relationship, the dowels extending through holes in the blade means and the aforementioned aperture means and then expanded whereby to connect the assembly components together. The platform and cap members are further provided with runner means slidably engageable with complementarily shaped rail means of a razor handle.

3,703,765

DISPOSABLE RAZOR

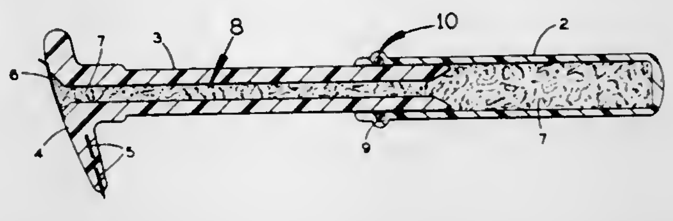
Gregorio A. Perez, 1925 S.W. 3rd Street, Miami, Fla.

Filed Aug. 4, 1971, Ser. No. 168,995

Int. Cl. B26b *21/06, 21/44;* **B65d** *47/34*

U.S. Cl. 30—41 **6 Claims**

A disposable razor in which a blade is molded therein with the edge thereof projecting from the shaving head and including a telescopic handle over a stem which is secured central of the shaving head and having a coaxial bore in the stem including a quantity of shaving cream for projection through the bore from an outlet in the razor head when the handle is manually moved over the stem.



3,703,766

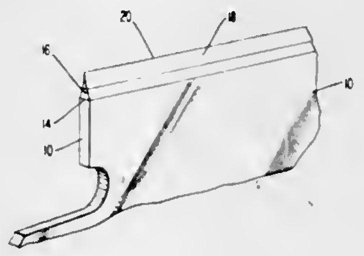
SAFETY RAZOR BLADE

Edward Camp Tibbals, 240 Brook Place, Boulder, Colo.

Filed July 20, 1970, Ser. No. 56,267

Int. Cl. B26b *21/54*

U.S. Cl. 30—346.53 **6 Claims**



Improved razor blade construction formed of a planar base element having a cutting edge compositely formed of a honed sapphire filament of fine cross section bonded to an intermediate layer of glass.

3,703,767

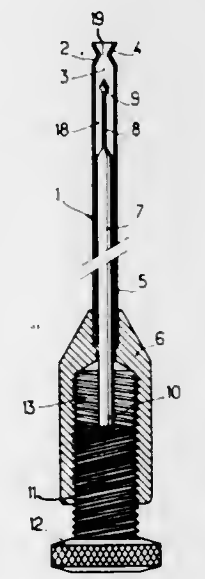
DENTAL INSTRUMENT FOR ROOT CANAL WORK

Jean Masseran, Metz-Magny, France, assignor to Micro-Mega, Metz-Magny, France

Filed July 2, 1971, Ser. No. 159,407

Int. Cl. A61c *5/02*

U.S. Cl. 32—57 **5 Claims**



A dental instrument for the extraction of filiform objects from the channels of extracted teeth, having a longitudinal tube on which is formed a first bearing surface, and a rod which is axially displaceable within the tube and which has a second cooperating bearing surface so that an object can be gripped between the two surfaces on longitudinal movement of the rod, and thereby extracted from the root channel.

3,703,768

DRAWING HEAD FOR USE IN DRAWING DEVICES

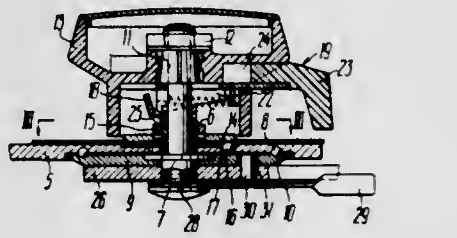
Evgeny Mikhailovich Perminov, Minsk, U.S.S.R., assignor to Minsky Opytny Zavod spetsialnogo Konstruktorskogo, Minsk, U.S.S.R.

Filed Nov. 4, 1970, Ser. No. 86,801

Claims priority, application U.S.S.R., Feb. 24, 1970, 1400963

Int. Cl. B43l *13/08*

U.S. Cl. 33—79 R **3 Claims**



A drawing head for use in drawing devices in which two flat members are mounted on a common axle and fixed relative to each other by means of spherical bodies disposed therebetween. The first flat member is associated with a means for moving the drawing head in the plane of the drafting board, and the second member with drawing scales through the intermediary of a square. The square is loosely mounted on the axle and is fixed relative to the second flat member by means of a friction clamp.

3,703,769

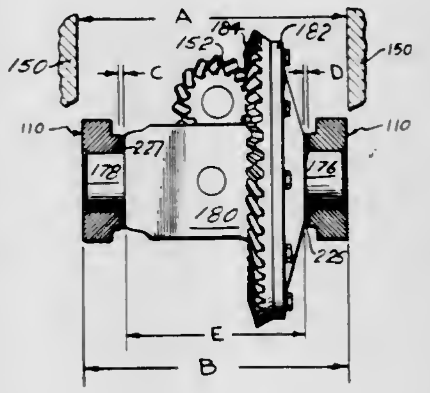
JIG MEASURING BLOCK AND USE OF THE SAME

Richard D. Pfeiffer, 9812 S. E. 5th, Bellevue, Wash.

Filed May 28, 1969, Ser. No. 828,610

Int. Cl. G01b *3/38*

U.S. Cl. 33—181 AT **22 Claims**



This invention is for a jig measuring block and the method of using the jig measuring block. The jig measuring block is of use in aligning gears in a differential, a transmission and final drives in small and large machinery such as small trucks, wheel-type vehicles, crawler vehicles, and industrial material handling machinery and the like. The jig measuring block makes it possible to save time, save material and to align the gears with greater accuracy in repairing such machinery. Further, it makes it possible for the small repair shops to economically and accurately repair such machinery.

3,703,770

ADJUSTABLE STRING PEEP

Howard S. Sofield, 100 Columbia Avenue, Lindenwold, N.J.

Filed June 16, 1970, Ser. No. 46,695

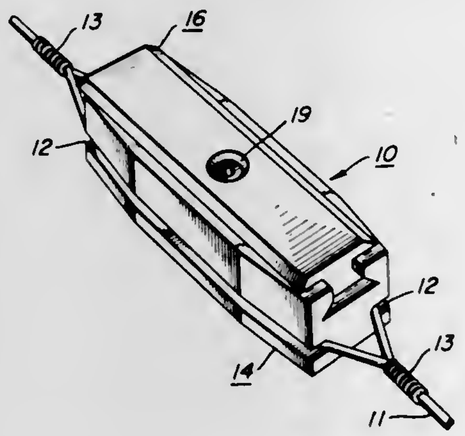
Int. Cl. F41g *1/00;* **F41b** *5/00*

U.S. Cl. 33—265 **4 Claims**

An adjustable "string peep" that is to provide a solid anchor for the archer who shoots a variety of distances while using a sight on the bow.

In the past an archer using a "string peep" in his bow-string would have two basic types to choose from. These two types consisted either of a hole or elongated slot through the center of the piece of material in the string commonly known in Archery as a "string peep."

An archer using the type with a hole through the center would find that he would have to "float" his anchor to see through the hole clearly when he moved the sight on the bow down as he got farther away from the target. The other type of "peep" has an elongated slot in the center which would enable the archer to keep a "solid anchor" but the disadvantage of this type is that he would not be able to control his eye alignment up and down inside the elongated slot therefore loseing exact sight and string alignment. The disadvantage of all these types of "string peeps" is that they are not adjustable once they are tied into the bow-string.



3,703,771

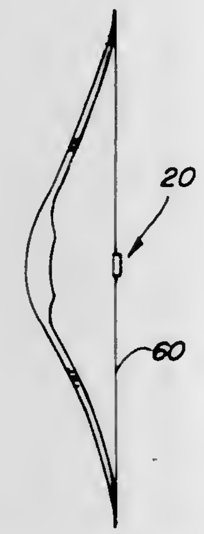
BOWSTRING-MOUNTED PEEP SIGHT

Charles A. Saunders, Columbus, Nebr., assignor to Saunders Archery Company, Columbus, Nebr.

Filed Feb. 10, 1971, Ser. No. 114,108

Int. Cl. F41g *1/00;* **F41b** *5/00*

U.S. Cl. 33—265 **6 Claims**



A bowstring-mounted peep sight including a body having vertically disposed side channels serving as housings and guides for carrying the strands of a divided multi-filament bowstring. A frame encircling the body of the sight and overlying the divided strands firmly embraces the peep sight body along opposed sides thereof, the frame including internally formed upper and lower bosses or hubs having axially disposed in-line passages adapted slidably to receive the bowstring therethrough, whereby the peep sight is conveniently secured on the bowstring in any selectable position. The body of the peep sight, adjacent the area of the sighting port, is provided with a grating-type surface contour to eliminate reflection and glare in the region of the port.

3,703,772

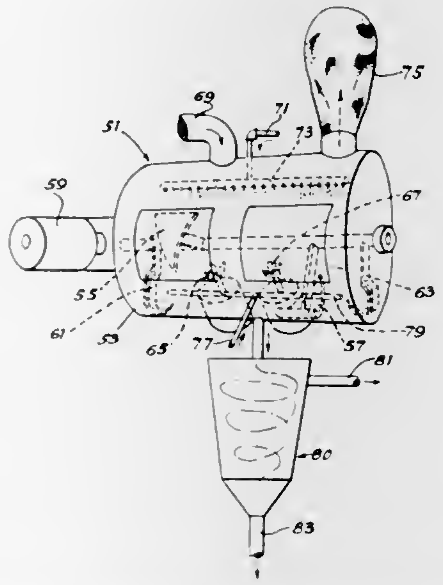
DRYING OF DETERGENTS

Neil Martin McHugh, Bridgewater; Clarence Scheurman, III, Green Brook, and Albert Lyle Schulerud, Nutley, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed July 27, 1971, Ser. No. 166,505

Int. Cl. F26b *3/00*

U.S. Cl. 34—9 **10 Claims**



Aqueous solutions of heat sensitive synthetic organic detergents, such as sodium higher alkyl benzene sulfonates, are dried by admixing such a solution with a very finely divided sorbent material, such as a water soluble builder or filler salt or an insoluble scouring material, thereby distributing the solution over a very greatly increased area, which speeds drying and prevents hot spots during drying, and drying the mixed detergent-sorbent-moisture particles.

3,703,773

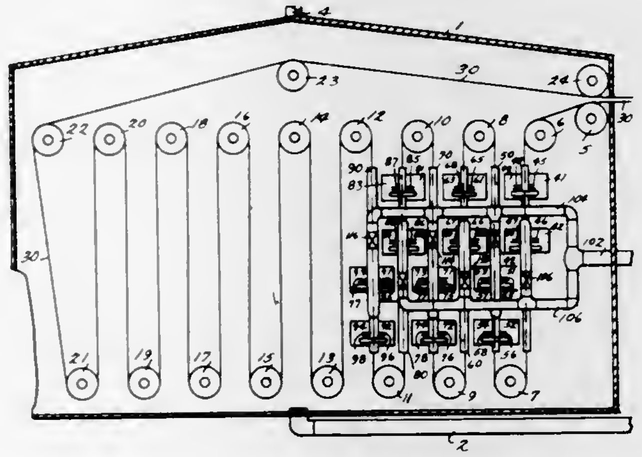
GAS PHASE REACTOR

James Paul Reid, Jr., and David S. Deskins, both of Greensboro, N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed April 9, 1970, Ser. No. 26,904

Int. Cl. F26b *13/06*

U.S. Cl. 34—159 **4 Claims**



A method and apparatus are disclosed for the continuous treatment of fabrics containing cellulose with a gaseous mixture of formaldehyde and a catalytic amount of sulfur dioxide. The temperature and moisture content of the fabric to be treated are carefully controlled within a closed chamber as the fabric is first exposed to an atmosphere containing a non-explosive amount of formaldehyde vapor, then cured and dried within the closed chamber.

3,703,774

MAGNETIC RECORDING-REPRODUCING DEVICE CAPABLE OF AUTOMATIC REPETITIVE REPRODUCTION

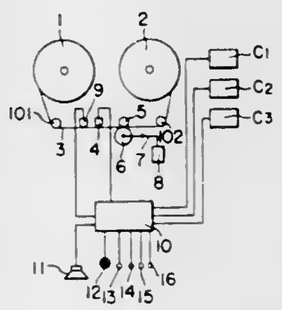
Takeshi Goshima, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 17, 1970, Ser. No. 90,407

Claims priority, application Japan, Nov. 21, 1969, 44/13434

Int. Cl. G09b *5/04*

U.S. Cl. 35—35 C **8 Claims**



A magnetic recording-reproducing device, especially suitable for educational purposes or for dictation, which is capable of automatic repetitive reproduction by using a master tape storing therein information units of various lengths and time signals representing the various lengths of such information units. The information units are transferred from the master tape onto a plurality of endless magnetic recording mediums having different lengths, whereafter any particular one of the endless magnetic recording mediums is played back in accordance with a corresponding one of the time signals to thereby repeatedly reproduce the information unit on that particular medium.

3,703,775

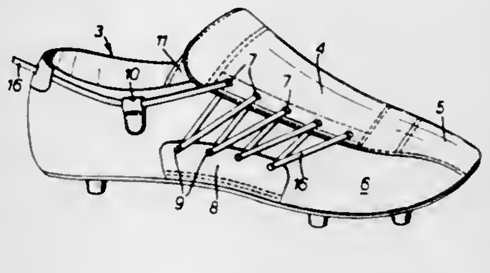
FOOTBALL BOOTS

Joseph Gatti, 57 Oakwood Avenue, Beckenham, England

Filed Sept. 15, 1970, Ser. No. 72,443

Int. Cl. A43b *11/00*

U.S. Cl. 36—2.5 AG **4 Claims**



A football boot, the upper of which is provided with an outer shield which covers the instep of the wearer, each side edge of the shield being provided with a plurality of lace holes, preferably there being stitched or otherwise secured to each side of the upper a flap which is provided with a plurality of corresponding lace holes, the lace holes being located so that the lacings may fasten the shield centrally or to the left or right of the instep of the wearer as desired.

3,703,776

EARTH SCRAPER

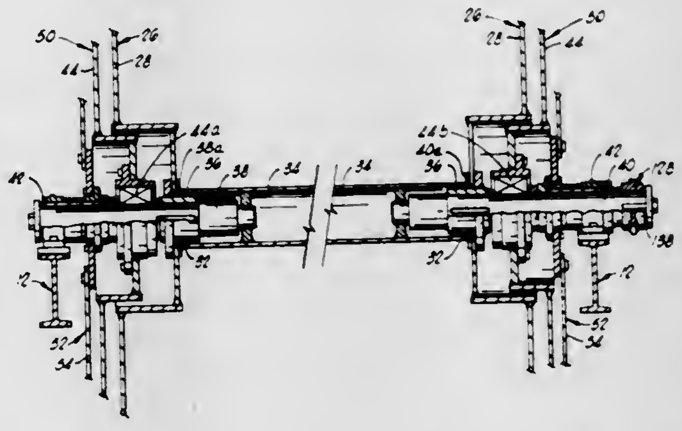
Robert B. Feistel, Jr., Oklahoma City, Okla., assignor to HSH, Inc., Oklahoma City, Okla.

Filed Oct. 15, 1970, Ser. No. 80,963

Int. Cl. B60p *1/00;* **A01b** *5/00*

U.S. Cl. 37—9 **7 Claims**

An earth scraper of the type having a support frame, wheels journaled on the support frame to support the earth scraper as it rolls over the ground, a bowl for accumulating and discharging scraped earth, scoop means for scraping earth, and earth elevating means for depositing scraped earth in the bowl. The scraper of the invention has hydraulic actuation means for positioning the bowl in earth accumulation or discharge positions, hydraulic actuation means for elevating and depressing the scoop means relative to the support frame and for raising and lowering the support frame relative to the ground, and means for connecting the earth scraper to a tractor. Means for journaling the bowl, earth elevating means and scoop means in the support frame is also disclosed.



3,703,777

STEAM-DRY IRON

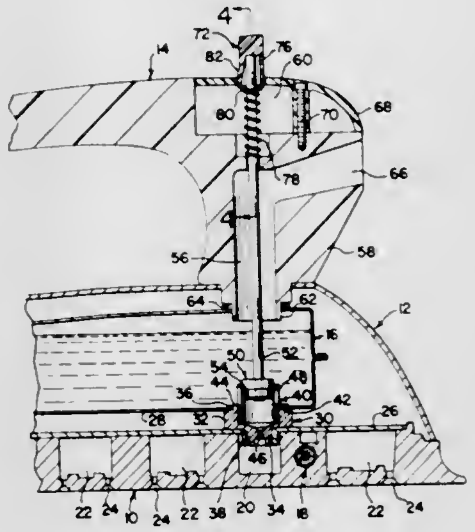
Robert S. Knapp, St. Louis, Mo., assignor to The Hoover Company, North Canton, Ohio

Filed Jan. 6, 1971, Ser. No. 104,252

Int. Cl. D06f *75/06*

U.S. Cl. 38—77.83 **11 Claims**

3777



A steam-dry iron which may be selectively operated to (1) produce steam at a predetermined normal rate; (2) operated to produce a momentary pulse of steam at a rate greater than such normal rate, or (3) operated as a dry iron with no steam being produced.

3,703,778

PLURAL COLUMN CHANGEABLE DISPLAY MECHANISM

Frederick W. Pfleger, 1152 Barbara Drive, Cherry Hill, N.J.

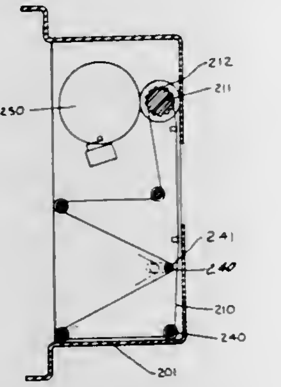
Filed April 27, 1970, Ser. No. 31,980

Int. Cl. G09f *11/18*

U.S. Cl. 40—32 **3 Claims**

A plural column display device or register wherein at least a pair of lower and higher order column rotors have extending thereacross respective lower and higher order tapes which carry suitable indicia and are shiftable by their associated rotors for presentation of indicia at a display location.

A cyclic drive means is operatively connected to the lower order rotor and a normally inactive drive transfer means is interposed between adjacent order rotors for drive transmission to the next higher order responsive to a preselected pattern of control associated with the lower order column.



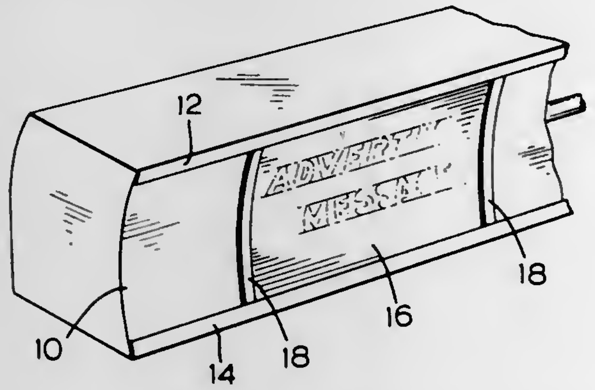
3,703,779
TRANSLUCENT SIGN

Allan Goldman, 23 Overbank Crescent, Don Mills, Ontario, Canada

Filed Nov. 14, 1969, Ser. No. 876,807

Int. Cl. G09f *1/02*

U.S. Cl. 40—135 **5 Claims**



A translucent transit card advertising sign consisting of a sheet of paper or bristol of specific characteristics laminated between two sheets of plastic, one on each side of the paper or bristol. The paper or bristol has an opacity in the range between 90 and 96, a caliper of between 0.003 and 0.0065 inches, and a basis weight of between 120 and 240 pounds in the case of paper, and between 120 and 180 pounds in the case of bristol. When paper is used, its surface is clay coated. The plastic sheets each have a thickness of between 0.0015 and 0.005 inches. In some cases the plastic may be laminated only to one side of the paper or bristol and in that case the plastic thickness will be between 0.0015 and 0.010 inches.

3,703,780
EXPLOSIVE CHARGE DEVICE AND ASSEMBLY

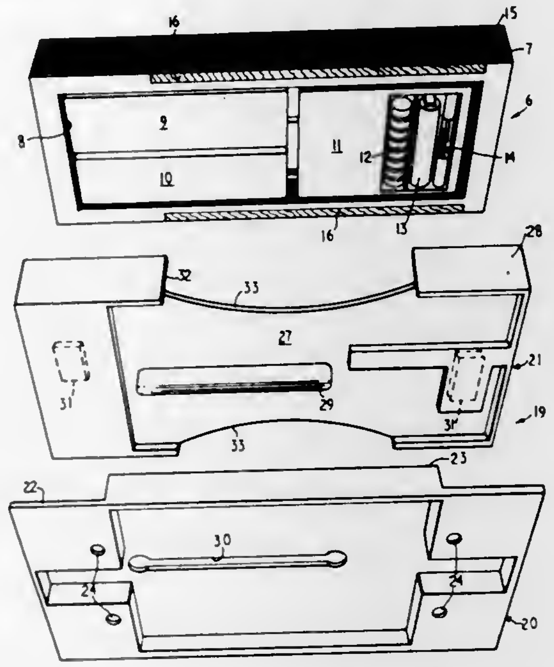
George King, 458 Bexley Road, Bexley, New South Wales, Australia

Filed Aug. 11, 1970, Ser. No. 62,842

Int. Cl. F41c *27/00*

U.S. Cl. 42—1 R **9 Claims**

A device for assisting in the apprehension of persons responsible for bank robberies and the like, the device having the external appearance of a bundle of currency notes and being provided with an internal compartment housing an explosive charge and electrical circuit means operating with a time delay for automatically firing the charge. A magnetic switch controls the energization of the electrical circuit and has a set of contacts normally maintained in an off position by a magnet in a holder for the device and when the device is handed over upon demand during a robbery, the magnetic switch moves away from the magnet and closes the electrical circuit.



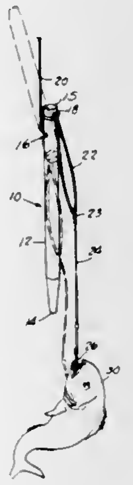
3,703,781
FISHING DEVICE

Bobby T. Walker, Route 3, Box 356, Monroe, La., and Vincent F. Danna, Route 2, Box 442-A, West Monroe, La.

Filed Dec. 11, 1970, Ser. No. 97,198

Int. Cl. A01k *97/12*

U.S. Cl. 43—16 **9 Claims**



A fishing device for setting a hook in a fish, playing the fish, and indicating that the fish has been hooked. The device comprises a shaft tapering at one end to a tip portion, and having connected thereto at its opposite end an elastic band having an unstretched length sufficient to reach the tip portion but being stretchable to engage the tip portion. A main fishing line is connected to the shaft at a point adjacent to the connection point of the elastic band but in closer proximity to the tip portion. A fish hook supporting line is connected to the elastic band at its tip-engaging portion. The elastic band when stretched to engage the top portion is releasable therefrom by a pull on the fish hook supporting line. When the device is triggered, the elastic band acts to set the hook in the fish and play the fish until retrieved by the fisherman, and the shaft swings backwards and forwards to act as an indicator to the fisherman that the fish has been hooked.

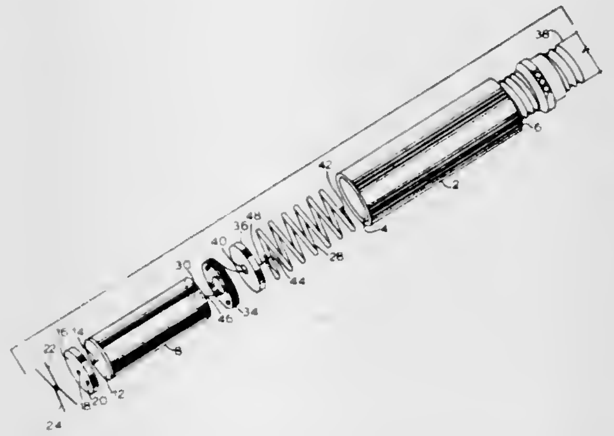
3,703,782
PRESSURE SENSITIVE APPARATUS

William B. Brown, 522 West 39th Street, Topeka, Kans.

Filed Feb. 4, 1971, Ser. No. 112,607

Int. Cl. A01k *87/00;* **B63c** *7/26*

U.S. Cl. 43—23 **32 Claims**



A housing having a housing open end is provided. A hollow member having a hollow member opening is slidably positioned in the housing with the hollow member opening facing the housing open end. A resilient diaphragm is mounted over the hollow member opening. A pin is mounted to the resilient diaphragm. A pin guide having a pin guide hole is slidably positioned in the housing so that the pin projects through the pin guide hole. A first strand loop and second strand loop are mounted oppositely to the housing and snugly looped over the part of the pin projecting from the pin guide hole. A biasing means is provided for urging the hollow member toward the housing open end. The biasing means can be liquid pressure as when the pressure sensitive apparatus is submerged upright in liquid, gravity when the housing open end is pointed downwardly or a spring. In operation, when the ambient pressure sufficiently exceeds the pressure in the hollow member, the diaphragm and pin move into the hollow member. When the pin moves below the surface of the pin guide the first strand loop and second strand loop slip off the pin and allow the hollow member to be urged out of the housing. A locating strand can be mounted at opposite ends to the hollow member and housing or spring. Thus, a means of detecting pressure changes and locating apparatus is provided.

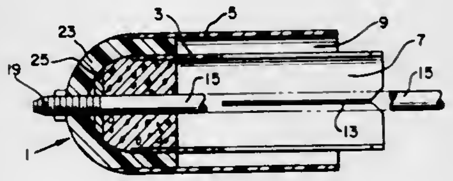
3,703,783
TROT LINE CASTER

Samuel T. Pool, P.O. Box 2014, Pascagoula, Miss.

Filed June 3, 1971, Ser. No. 149,724

Int. Cl. A01k *97/06, 91/02*

U.S. Cl. 43—54.5 A **10 Claims**



A caster for a fishing line carrying a plurality of spaced baited hooks, comprising a guide weight to which a pair of concentric shells are at one end connected, with the other end of said concentric shells left open to provide an accessible inner chamber for baited hooks and an accessible surrounding chamber for storage of line to which the hooks are connected, said concentric shells having at least one slot running longitudinally from the open end of each toward the guide weight.

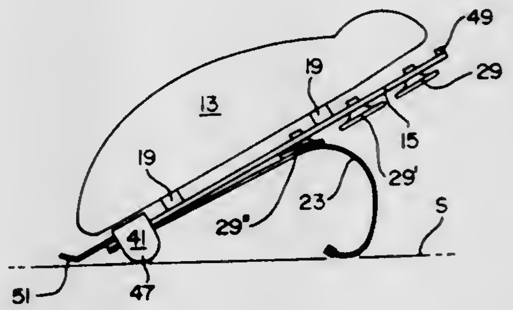
3,703,784
MULTIPLE JUMPING DEVICE

Voorhis F. Wigal, Box 1542, Jackson, Tenn.

Filed March 16, 1972, Ser. No. 235,158

Int. Cl. H63h *13/02*

U.S. Cl. 46—129 **5 Claims**



A spring-powered device which, after being properly set, is placed on a support surface and the device then jumps upwardly several times. The device includes a body member which may have any one of several configurations thereto, e.g., an animal or a bug. A frame is included and has a row of suction cups attached thereto. Additionally, a broad elongated spring is included which has one of its ends attached to the frame, with the other of its ends being free to assume a curled disposition when relaxed. The spring normally curls downwardly away from the frame, and urging the spring into a straight disposition is effective to engage the suction cups therewith. The suction cups sequentially release respective portions of the free end of the spring to yield a snapping action against a supporting surface with each release which causes the device to jump repeatedly.

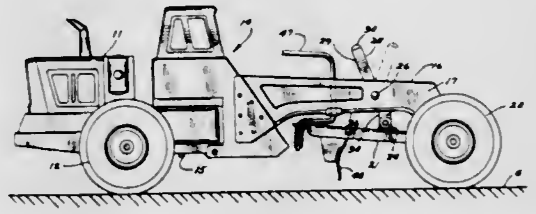
3,703,785
TOY ROAD GRADER

Lee J. Pfeilsticker, Long Lake, and Ronald R. Pauly, Mound, both of Minn., assignors to Tonka Corporation, Minneapolis, Minn.

Filed Feb. 25, 1972, Ser. No. 229,296

Int. Cl. A63h *33/30*

U.S. Cl. 46—40 **5 Claims**



A toy road grader having a grader blade mounted crosswise on the underside of the front portion of the grader body which is yieldably held in a raised position above the ground surface under spring tension and connected to an upright handle mounted on the body for rocker movement about a transverse axis whereby as the handle is swung forwardly it will lower the blade against said spring tension into engagement with the ground surface. The blade is pivoted on a vertical axis and is adjustable between different locked angular positions relative to the line of travel.

3,703,786
GRASS SEED MAT

Donald M. Swan, 28757 Chatham Road, Grosse Ile, Mich.

Filed June 23, 1971, Ser. No. 156,080

Int. Cl. A01g *31/00*

U.S. Cl. 47—56 **3 Claims**

A grass seed mat for the germination and growing of grass seed when placed in contact with a soil surface consists of a sheet of polyurethane foam material with grass seeds attached to one side by means of a water-soluble glue or adhesive. In order for the mat to provide the dual functions of providing adequate moisture retention (mulching effect) and penetration of the grass shoots through the mat, achieving an optimum 90–100 percent seed germination and growth, the pore or cell size of the foam material must be in the critical range of 35 to 40 pores per lineal inch and a thickness of between 4/64 to 6/64 of an inch. Preferably, the polyurethane foam material is a reticulated, fully open pore-type wherein the pores are of substantially uniform size (as compared one to the other), with a total of approximately 97 per cent void space and a density of 1.7 to 2.3 pounds per cubic foot. Foam material having pore sizes or thicknessesabove or below this stated critical range will not produce the desired 90–100 percent germination and shoot penetration because of either inability to provide proper moisture retention, inability of the grass shoots to penetrate the mat or lifting of the mat from contact with the soil surface.

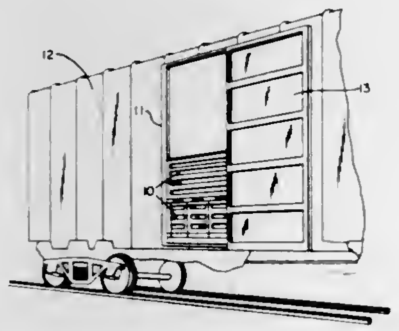
3,703,787
PERMANENT, SAFETY, INNER DOORS FOR FREIGHT CARS

Juan Francisco Zendejas Gomez, Av. San Antonio N. 307, Mexico City, Mexico (18, D.F.)

Continuation-in-part of Ser. No. 874,129, Nov. 10, 1969. This application July 13, 1971, Ser. No. 162,197

Int. Cl. E06b *3/32*

U.S. Cl. 49—169 **5 Claims**



The invention is directed to novel inner doors adapted to fit the door frame, within the sliding doors of a freight car. The inner doors comprise upper and lower doors adapted to be secured in place by spring bolt means for easy installation and removal. The lower door is provided with a hinged section which includes a hatchway for the convenient unloading of grain and the like. With bulk merchandise, the inner doors provide easy loading and unloading.

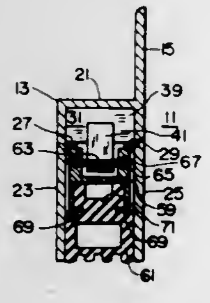
3,703,788
AUTOMATIC DOOR BOTTOM

Victor J. Rivers, San Leandro, Calif., assignor to Pemko Manufacturing Co., Emeryville, Calif.

Filed Oct. 1, 1970, Ser. No. 77,283

Int. Cl. E06b *7/20*

U.S. Cl. 49—307 **8 Claims**



An automatic door bottom to seal the gap between the bottom of a door and the door sill. The seal element is held in a channel mounted on a door and includes a spring loaded slidable pushrod which upon closure of the door forces the seal from the channel and into contact with the door sill, and upon opening, the slidable pushrod is released and the spring retracts the seal back into the channel.

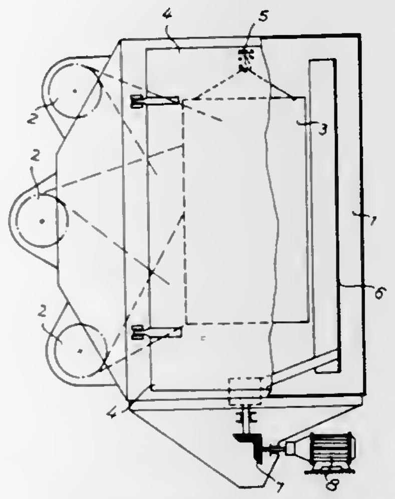
3,703,789
CHAMBER FOR TREATING WORK PIECES BY BLAST

Johannes Zeidler, Reinbek near Hamburg, Germany, assignor to Alfred Gutmann Gesellschaft fur Maschinenbau, Hamburg, Germany

Filed May 17, 1971, Ser. No. 143,782

Int. Cl. B24c *3/14, 9/00*

U.S. Cl. 51—9 **10 Claims**



The specification discloses a chamber for treating work pieces by a blasting medium in which blasting devices discharge the medium into the chamber in a side opening in the chamber. Doors are provided for the chamber to permit work pieces to be placed into the chamber and removed therefrom. Also included in the chamber is a shield which moves in front of the opening for the blasting medium before the doors are opened and which moves to a position opposite the opening when the doors are closed. A control device controls the supply of blasting medium to the blasting devices and an automatic control system is provided for correlating the operation of the various devices.

3,703,790
ACCESSORY FOR ADHESIVELY FIXING AND BONDING FASTENING ELEMENTS IN FIXING HOLES

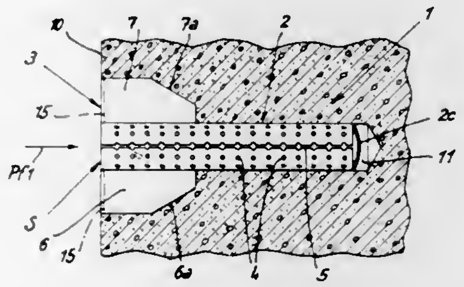
Heinz Otto Mattes, and Friedrich Flesch, both of Emmendingen, Germany, assignors to Max Langensiepen Kom. Ges., Emmendingen, Germany

Filed Jan. 19, 1971, Ser. No. 107,752

Claims priority, application Germany, Jan. 22, 1970, G 70 02 080.3

Int. Cl. E04b *1/38, 1/41*

U.S. Cl. 52—98 7 Claims



An accessory for adhesively fixing and bonding fastening elements in fixing holes, particularly in soft building materials, by the destruction inside a fixing hole of a cartridge containing an adhesive, preferably the two components of a two-component adhesive, and distributing the adhesive after its release. The accessory has the form of an insertion comprising a protective sleeve accommodating an adhesive-filled cartridge. The protective sleeve has an external diameter adapted to fit into a fixing hole and an internal diameter to fit around a fastening element that is to be secured in the fixing hole. The length of the protective sleeve corresponds to the length of the fastening element and its peripheral surface is provided with holes for the passage therethrough of the adhesive after its release. The external end of the protective sleeve is open.

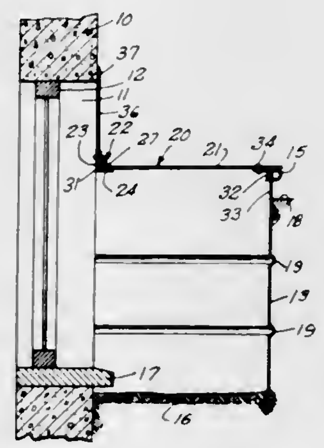
3,703,791
WINDOW WELL COVER

Herbert J. Slade, R.R. 2, Harvard, Ill.

Filed Jan. 6, 1971, Ser. No. 104,278

Int. Cl. E04f *17/06*

U.S. Cl. 52—107 **2 Claims**



A window well cover of the type having a light-transmitting sheet selectively sized to cover an open top of a window well is characterized by an elongated, reinforcing, metal strip extending parallel to, and disposed near, a foundation wall. The metal strip has a horizontal portion formed with an elongated slot receiving and firmly supporting the adjoining sheet edge, which is tightly clamped in the slot. An upstanding portion of the rigidifying strip enhances the vertical rigidity of the window well cover and forms a base for supporting an upstanding sheet of light-transmitting material which serves as a storm window for that portion of a basement window projecting above the window well.

3,703,792
WALL STRUCTURE

David H. Bill, 56 Jacama Avenue, Lower Templestowe, Victoria, Australia

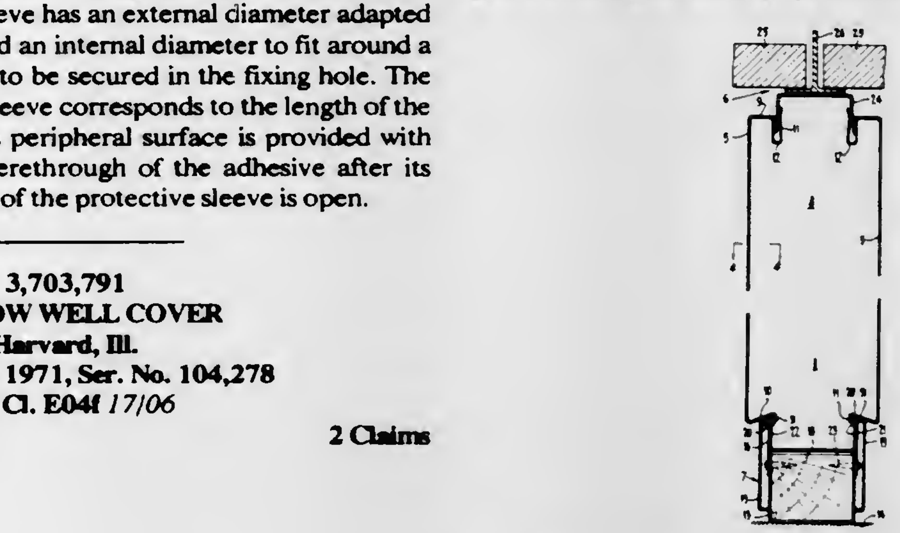
Filed Aug. 31, 1970, Ser. No. 68,366

Claims priority, application Australia, Sept. 5, 1969, 60526/69

Int. Cl. E04b *2/82*

U.S. Cl. 52—242 **4 Claims**

A wall structure which is adapted to form a dividing wall or partition within a building. The construction consists of upper and lower support members which extend along the length of the wall. One or more wall panel members are detachably connected to the supports and are supported thereby. Each panel consists essentially of a flat pressed-steel sheet having a flange or ledge arrangement extending around the perimeter thereof. The ledge along the upper edge of the panel supports one or more substantially U-shaped clips which are adapted to engage a downwardly extending flange of the upper support member and detachably locate the upper edge of the panel. The ledge along the lower edge of the panel forms an inverted channel which engages a complementary channel along the lower support member to locate and support the panel. The ledges or flanges along the vertical edges of the panel provide rigidity to the panel and also provide means whereby adjacent panels may be interlocked when a wall consists of more than one panel. The wall may consist of two rows of the above described panels, the rows being spaced apart in a transverse direction to provide a central cavity therebetween.



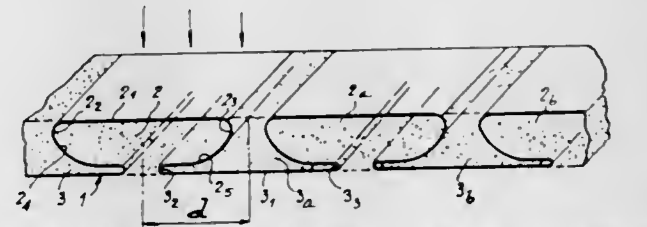
3,703,793
DECREASING FLEXIBILITY APERIODIC RESILIENT DEVICE FOR FLOORS, PARTITION WALLS AND LIKE BUILDING MEMBERS

Bernard Barrat, Neuilly-sur-Seine, France, assignor to Productions Essemes S.A., Pierrefitte, Seine Saint-Denis, France

Filed April 21, 1970, Ser. No. 30,464

Int. Cl. E04b *1/62;* **E04f** *15/22*

U.S. Cl. 52—403 **7 Claims**



The device relates to the construction of buildings and prevents the transmission of any vibrations between the constitutive parts of said buildings.

The device comprises an elastic corrugated band to form opposed loops filled with plastic foam, and is placed between a floor and any other part of a building where it is desirable to prevent the transmission of vibrations.

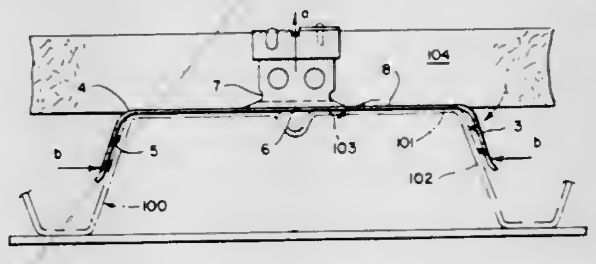
3,703,794
STRUCTURAL RETAINER CLIP

Andrew Gracon, Cleveland, Ohio, and George A. Tinnerman, 3600 Stewart Avenue, Miami, Fla., assignors to said Tinnerman, by said Gracon

Filed April 28, 1970, Ser. No. 32,519

Int. Cl. E04b *1/40*

U.S. Cl. 52—506 **15 Claims**



The structural retainer clip formed by a hardened, resilient sheet metal clip element having a pair of opposed flanges connected by a base, and a connector element connected to the side of the center section of the base opposite the flanges. The flanges of the clip element are formed with teeth to grip a support member embraced by the flanges, such as a corrugation of a corrugated deck, when the flanges are spread by forcing the clip element on to the support member. The connector element is provided with retainer means to secure an article to the support member, the force exerted by the article being transmitted through the connector element to the center section of the base, and acting to fulcrum the side sections about curved sections which join the side flanges to the base, thereby augmenting the frictional engagement of the teeth of the flanges.

3,703,795

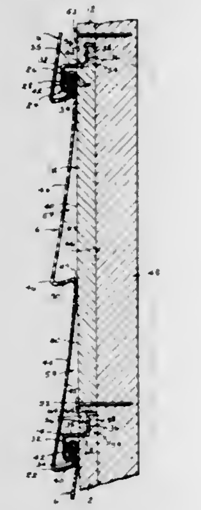
BUILDING SIDING UNITS

Lee H. Mattes, South Bend, Ind., assignor to Mastic Corporation, South Bend, Ind.

Continuation-in-part of Ser. No. 7,123, Jan. 30, 1970, abandoned. This application May 28, 1971, Ser. No. 148,015

Int. Cl. E04b *2/08;* **E04c** *2/46;* **E04d** *3/362*

U.S. Cl. 52—521 **7 Claims**



A siding unit for a building having an outer panel and a backing board. The outer panel includes an upper marginal portion having a generally horizontal web which extends rearwardly from the face portion of the panel and which terminates in an upturned generally vertical lip. The outer panel also includes a retainer part which extends along the upper marginal portion thereof. The retainer part extends below the web of the upper marginal portion. The outer panel includes a lower marginal or butt portion which interlocks with the panel retainer part of the siding unit in the lower adjacent siding course. The backing board of the siding unit includes upper and lower margins and has its lower margin positioned adjacent to the upper margin of a backing board in a lower adjacent siding course. The upper marginal portion of the outer panel of the siding unit is positioned and retained between the upper marginal portion of its backing board and the lower marginal portion of the backing board in the upper adjacent course. Securement means are driven through the backing board adjacent its lower marginal portion and into the building structure.

The face portion of the outer panel of the siding unit is spaced sufficiently from its backing board at one or more locations so as to define air spaces between the outer panel and its backing board.

3,703,796

AUTOMATIC PACKING AND WRAPPING APPARATUS

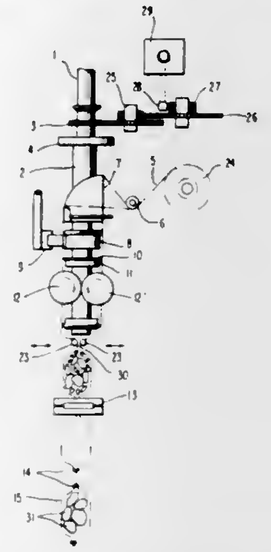
Kiyoshi Inoue; Tetsuo Ishikawa, and Shingo Okada, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Feb. 12, 1971, Ser. No. 114,850

Claims priority, application Japan, Feb. 12, 1970, 45/11460

Int. Cl. B65b *9/12, 51/04*

U.S. Cl. 53—180 **5 Claims**



An automatic packing and wrapping apparatus for wrapping articles such as blocks of meat, comprising an assembly for forming a strip of synthetic resin film into a tubular shape, an assembly for feeding the article into the tubular film through nozzles, and an assembly for tying the ends of the film so as to seal the article in the film. The nozzles include a crushing mechanism comprising, for example, a rotary cutter and a fixed cutter each secured to the end of a respective nozzle. The article is crushed by the crushing mechanism at predetermined intervals to form alternate bulky and slender portions for every given length of the article in the film. The article portions within the film are pinched and squeezed by a pair of pinch rollers, and then the surrounding film is tied with metal clips or the like.

3,703,797

ADSORPTION PROCESS FOR THE COMPLETE AND NON-DISSIPATIVE SEPARATION OF A GAS MIXTURE INTO ADSORBABLE AND NON-ADSORBABLE, IN PARTICULAR RADIOACTIVE COMPONENTS

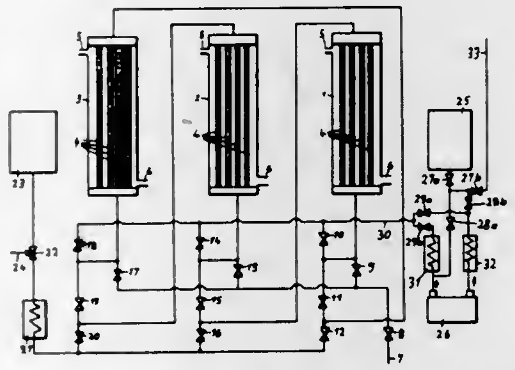
Manfred F. Lepold, Merzenich Uber Dueren; Gerhard Heinze, Schildgen; Gustav Kaule, Cologne-Stammheim, and Ernst Podschus, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 5, 1969, Ser. No. 855,697

Claims priority, application Germany, Sept. 13, 1968, P 17 94 140.1

Int. Cl. B01d *53/04*

U.S. Cl. 55—62 **5 Claims**



Process for the complete separation of an adsorbable gas component A from another substantially non-adsorbable gas component B in at least two adsorption zones 1 and 2 arranged one behind the other, comprising the following steps:

- a. in the first step the adsorption zone 1 is loaded until completely saturated with the component A;
- b. in the second step the feed gas in the interstitial volume of adsorption zone 1 is displaced with pure component A from a storage means and the sweeping gas, optionally together with the feed gas is delivered to the partially unloaded zone 2;
- c. in the third step the pure component A is liberated by heating of zone 1 and is delivered to a storage means. Thereafter the aforesaid steps are repeated however with interchanged functions of zones 1 and 2.

3,703,798

RELATING TO THREE-DIMENSIONAL CHROMATOGRAPHIC SYSTEMS

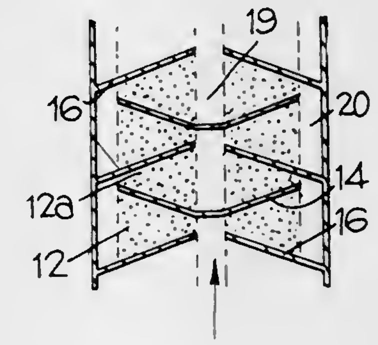
Victor Pretorius, "Klein Waterkloof," Club Avenue, Waterkloof, Pretoria, Transvaal, and Hans Helmut Hahn, 38, Marais Street, Bailey's Muckleneuk, Pretoria, Transvaal, both of Republic of South Africa

Continuation-in-part of Ser. No. 548,900, May 10, 1966, and a continuation-in-part of Ser. No. 598,365, Dec. 1, 1966. This application Aug. 4, 1967, Ser. No. 658,545

Claims priority, application South Africa, Aug. 5, 1966, 66/4669

Int. Cl. B01d *15/08*

U.S. Cl. 55—67 **37 Claims**



Elution in three-dimensional chromatographic systems is carried out in a direction of increasing cross-section. This is achieved with specially constructed apparatus or with columns modified by internals prescribing a path of ever increasing cross-section. A continuous elution based on improved sample introduction by impregnating a porous section containing a retarding phase with the sample and displacing the section into a position in advance of the separating system proper.

3,703,799

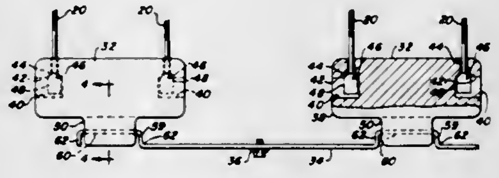
DISCHARGE ELECTRODE TENSIONING MEANS

Wendell Lewis Humphreys, 2364 Ganesha Avenue, Altadena, Calif.

Filed Oct. 22, 1969, Ser. No. 868,358

Int. Cl. B03c *3/41*

U.S. Cl. 55—147 **11 Claims**



Discharge electrode tensioning means and more particularly a means for post-tensioning a discharge electrode used in a precipitator and aligning such electrodes to maintain a spaced charge.

3,703,800

HUMID DE-DUSTING DEVICE FOR GAS-CONVEYOR CONDUITS

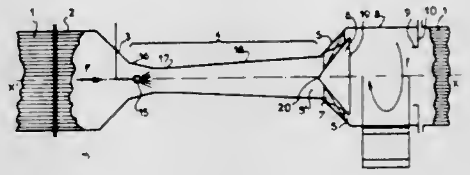
Paul Courbon, Oise, France, assignor to Charbonnages De France, Paris, France

Filed March 24, 1971, Ser. No. 127,635

Claims priority, application France, April 8, 1970, 7012770

Int. Cl. B01d *47/10*

U.S. Cl. 55—238 **7 Claims**



Device intended to free a flow of gas from the dust and solid particles which it carries in suspension.

It comprises a venturi wherein water is sprayed and which is comprised between a junction converging portion having a apex angle in the vicinity of 90° and a junction diverging portion having an apex angle in the vicinity of 90°. This latter is provided, on the one hand, with means for setting into rotation the flow of humidified gas, on the other hand, with a centrifugal separation conduit with an axial transfer sleeve.

This de-duster device may be inserted into a conduit system of ventilation air such as the ventilation pipes of underground mine workings.

3,703,801

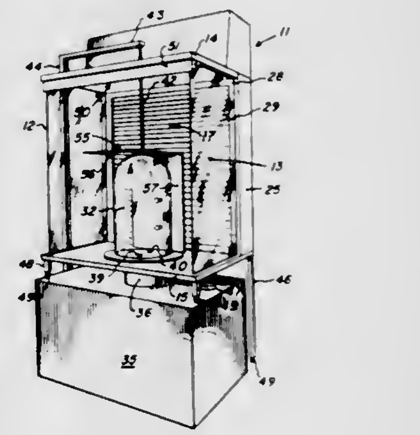
CLEAN AIR WORK STATION

Peter C. Deckas, Edina, Minn., assignor to Dexon, Inc., Minneapolis, Minn.

Filed April 5, 1971, Ser. No. 131,132

Int. Cl. B01d *31/00*

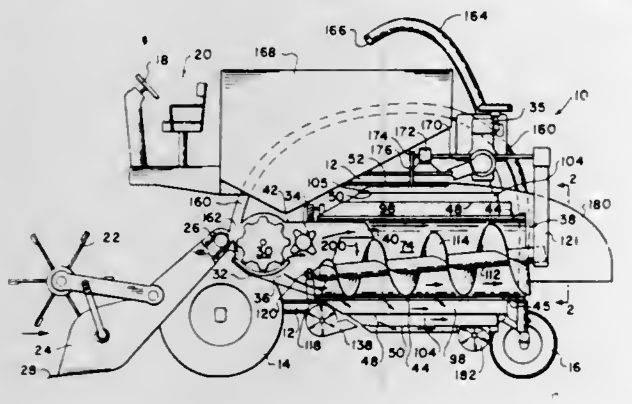
U.S. Cl. 55—385 **8 Claims**



A clear air work station having a horizontal work surface on which is disposed a bell jar having means for evacuating the jar. Filtered air is delivered horizontally over the region above the work surface and a shield secured to the bell jar prevents the filtered air from engaging the bell jar except for the lower portion of the jar immediately adjacent the work panel. When the jar is raised to get access to the material being worked on within the jar, the shield is simultaneously raised to allow filtered air to flow beneath the jar. By reason of the shield, air turbulence around the jar is eliminated. Since the shield moves with the jar, the total flow of filtered air remains constant regardless of the position of the bell jar.

3,703,802
COMBINE APPARATUS

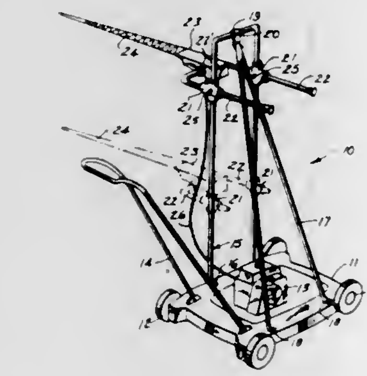
Frank Wrestler, R.R. No. 1; Harry J. Swift, R.R. No. 4, and Edgar R. Wrestler, R.R. No. 1, all of Hartford City, Ind.
Filed Jan. 20, 1972, Ser. No. 219,321
Int. Cl. A01f *12/44*
U.S. Cl. 56—13.3 **15 Claims**



The invention is a combine apparatus for harvesting field crops comprising in combination a vehicular supporting frame, means mounted on the frame for severing and disjoining the stalk and fruit portions of a field crop and producing a discharge thereof. Rotatably mounted on the supporting frame are a plurality of concentrically disposed, hollow cylindrical drums having foraminous walls which define a plurality of chambers. The innermost chamber is positioned to receive the discharge from the threshing means and the openings in the foraminous walls are graduated to pass the fruit portions, grain portions, and refuse material of the crop, respectively, and to retain the stem, tailings, and grain portions of the crop, respectively. Within each of the chambers there are provided auger means for forcibly moving the grain axially therethrough.

3,703,803
MOBILE VARIABLE HEAD, HEDGE TRIMMER

James N. McClure, Box 64, Oklaunion, Tex.
Filed Jan. 31, 1972, Ser. No. 222,064
Int. Cl. A01d *55/00*
U.S. Cl. 56—237 **4 Claims**

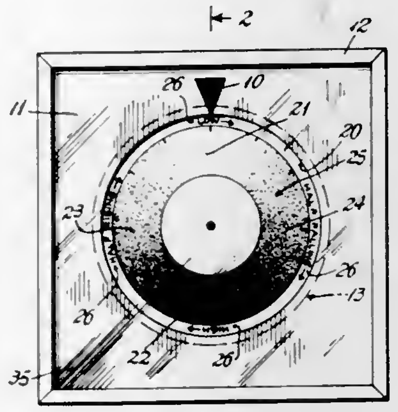


A device for trimming hedges. This device consists primarily of a power driven base with elevatable portions for raising and lowering the trimmer head containing a shears.

3,703,804
TIDE INDICATOR CLOCK

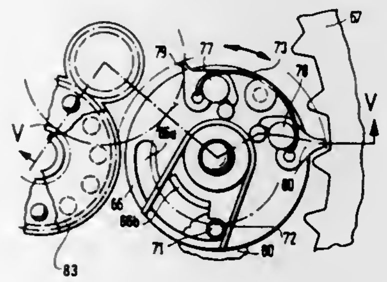
Gustaf T. Appelberg, Fairfield, Conn., assignor to Fairfield County Marine, Inc., Fairfield, Conn.
Filed May 14, 1971, Ser. No. 143,539
Int. Cl. G04b *19/26*
U.S. Cl. 58—3 **5 Claims**

A simplified tide indicator clock having a dial and an indicating element for cooperating therewith and relatively movable through a complete cycle from low tide to high tide and back to low tide in 12 hours and 25 minutes, said dial having pictorial indicia thereon progressively illustrating the change in tide conditions so as to graphically designate the present status of the tide for a given location.



3,703,805
ELECTRIC TIMEPIECE WITH DATE DIAL

Wolfgang Ganter, Schramberg-Sulgen; Heinz Otto, Rotenberg, and Josef King, Schramberg-Sulgen, all of Germany, assignors to Gebruder Junghans G.m.b.H., Schramberg, Germany
Filed March 8, 1971, Ser. No. 121,820
Claims priority, application Germany, March 11, 1970, P 20 11 568.8
Int. Cl. G04b *19/24*
U.S. Cl. 58—5 **10 Claims**



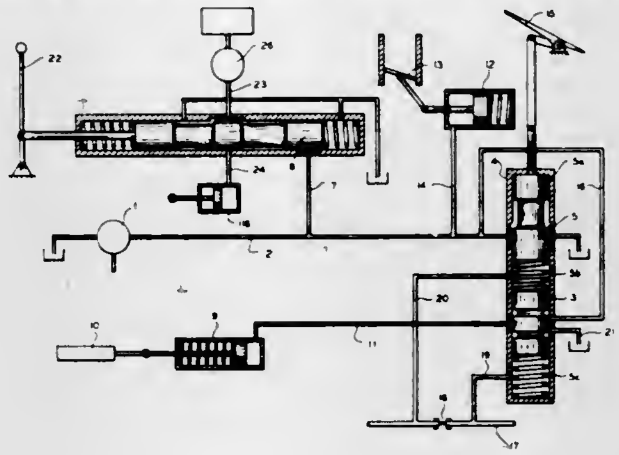
A setting mechanism for an electric timepiece including adjustment elements mounted for pivotal movement by a setting shaft. The setting shaft is shiftable axially between a plurality of functional positions so that the adjustment elements will either engage a date disk or a mechanism for the timepiece hands and impart thereto a pivotal motion to thereby set the date disk and the hands to the desired position. A resilient restoring means, cooperating with a stop means, automatically provides a "neutral" position for the adjustment elements, disengaged from the date disk and hour wheel.

3,703,806
CONTROL SYSTEM FOR LIFT TRUCKS

William A. Williamson, Niles, Mich., assignor to Clark Equipment Company
Division of Ser. No. 791,354, Jan. 15, 1969, Pat. No. 3,595,343. This application Nov. 13, 1970, Ser. No. 89,444
Int. Cl. F02b *41/00*
U.S. Cl. 60—19 **5 Claims**

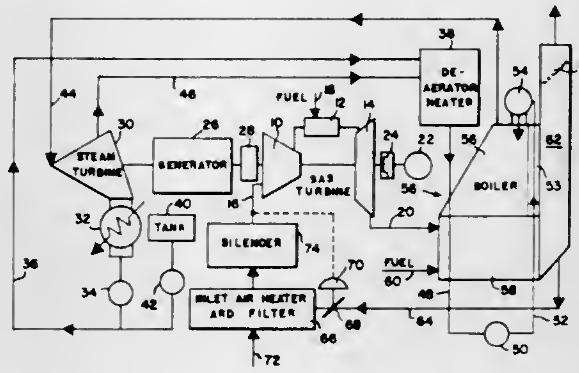
The system employs hydrostatic drive for a lift truck in combination with hydraulic system elements which control not

only the hydrostatic drive and truck speed through the accelerator setting, but also afford elements and controls for actuation of the lift mechanism which make possible a speed up of the engine to provide a fast lift while the truck is driven at a controlled slow speed.



3,703,807
COMBINED GAS-STEAM TURBINE POWER PLANT

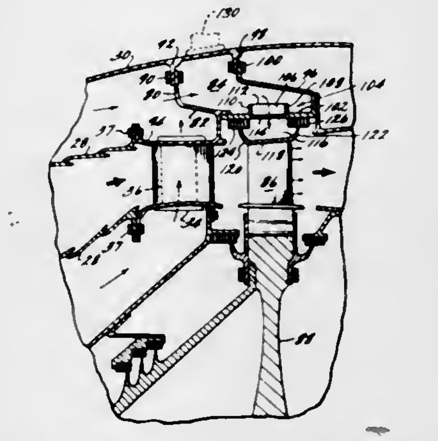
Ivan G. Rice, Spring, Tex., assignor to De Laval Turbine Inc., Trenton, N.J.
Filed Jan. 15, 1971, Ser. No. 106,724
Int. Cl. F02c *7/08*
U.S. Cl. 60—39.18 B **5 Claims**



In a combined gas-steam turbine power plant, part-load heat rate is improved by recirculating the boiler stack gas into the air inlet of the turbine compressor section.

3,703,808
TURBINE BLADE TIP COOLING AIR EXPANDER

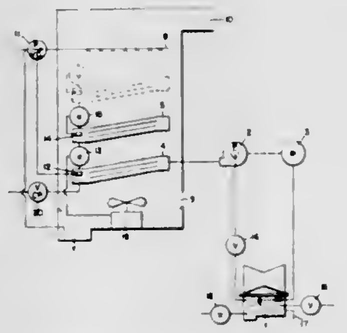
Eldon M. Stearns, Lebanon, Ohio, assignor to General Electric Company
Filed Dec. 18, 1970, Ser. No. 99,572
Int. Cl. F02c *7/12*
U.S. Cl. 60—39.66 **10 Claims**



A turbomachinery cooling structure wherein cooling air is delivered around a combustor to a chamber formed by stationary structure above the tips of rotating blading. Means are provided, in the form of stationary vanes of airfoil cross section, to accelerate the cooling air and to deliver the same as a tangential flow to a cavity formed above the blading. The cavity is formed by means of a rotating blade shroud, which cooperates with the above-mentioned stationary structure. The cooling air is then delivered to an internal cooling passageway of the blading.

3,703,809
PRESSURE PROCESS FOR CONDENSING POWER HOUSE STEAM

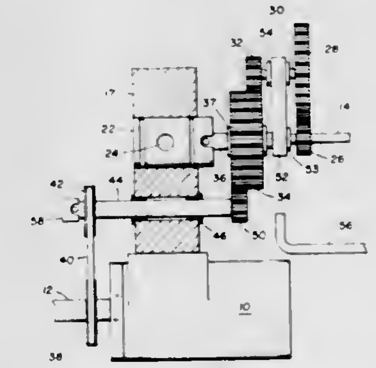
James L. Cassidy, 66 Prospect Street, Turners Falls, Mass.
Filed Dec. 3, 1970, Ser. No. 94,881
Int. Cl. F01n *7/00*
U.S. Cl. 60—95 **4 Claims**



A method of operating a steam turbine system comprising, leading the steam from the turbine to a pump automatically regulated to maintain a low pressure for preventing turbine back-pressure at all turbine loads, leading the steam from the pump to a heat-exchanger and condenser wherein it is allowed to build up pressure to a desired level, setting that level externally and automatically maintaining that level internally within reasonable limits by varying the surface area of heat exchange being used.

3,703,810
SPEED CONTROL APPARATUS

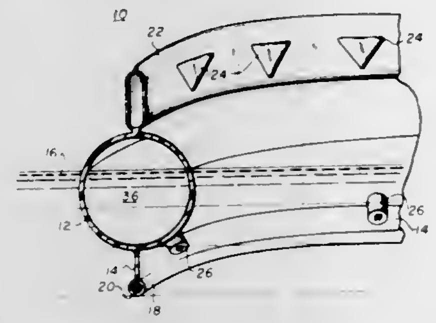
James L. Rawson, and Leslie E. Rawson, both of P. O. Box 217, Atkins, Iowa
Filed Oct. 14, 1970, Ser. No. 80,558
Int. Cl. F01b *21/04*; **F01l** *33/02*
U.S. Cl. 60—97 S **9 Claims**



A control apparatus for synchronizing the speed of a rotating member with a variable speed input or for producing angular displacement of an output shaft in response to an input signal. The apparatus achieves correlation between the input and output by the use of a mechanical gear arrangement between the input and output shafts which arrangement produces angular displacement of a control member upon receipt of an input pulse or up variation of the speed of the input shaft from the output shaft. This displacement is then utilized to regulate an electrical speed control device, the flow to a hydraulic actuator, or a mechanical variable speed drive which adjusts the speed or displacement of the output shaft accordingly.

3,703,811
OIL BOOM WITH CONTINUOUS CONDUIT THERETHROUGH

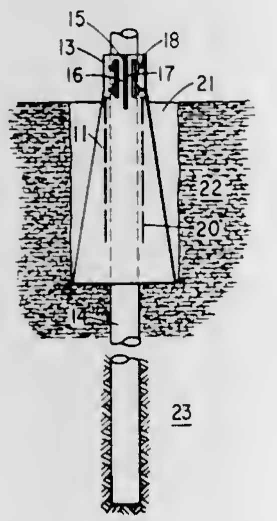
Wilbur C. Smith, North Caldwell, N.J., assignor to Worthington Corporation, Harrison, N.J.
Filed Aug. 28, 1970, Ser. No. 67,858
Int. Cl. E02b *15/04*; **B01d** *17/02*
U.S. Cl. 61—1 F **8 Claims**



An oil boom is disclosed which comprises a continuous length of tubing made of flexible material; a first weighted fin of flexing material suspended from the tubing along its length thereof; and valve means secured to the tubing at predetermined locations along the length thereof for selectively permitting the ingress and egress of fluid to and from the tubing, whereby the tubing can be inflated and deflated. Thus the oil boom may be utilized not only to contain an oil slick floating on water, but also as a conduit to store and/or transfer oil which has been removed therefrom. In the preferred embodiment, the boom is further provided with a second fin of flexible material upstanding from the tubing along its length thereof with the second fin having floatation means therein for floating the boom and for increasing the buoyancy of the oil boom should the boom be lowered into the water. One or more lengths of oil boom of the invention may be joined in end to end relationship by connection means which join the lengths of tubing with fluid communication established therebetween.

3,703,812
HEAVE-PROOF ARCTIC PILING

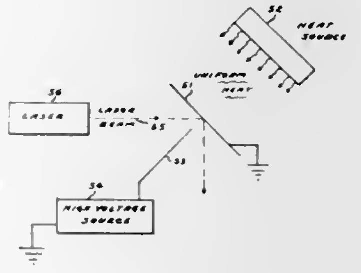
George R. Newton, Tulsa, Okla., assignor to Amoco Production Company
Filed Nov. 13, 1970, Ser. No. 93,764
Int. Cl. E02d *5/44*
U.S. Cl. 61—53 **3 Claims**



Piling projecting at the upper part through tundra are protected from ground movement in an upward direction due to periodic freezings and thawings of the tundra by being fixed to conically shaped collars extending down from the surface of the earth, with the base of the cone down. The conical portion thus becomes a part of the pile, mechanically speaking. If desired, the conically shaped part may be an integral part of the pile. As the liquid part of the tundra surrounding the upper part of the pile freezes, it expands radially inward against the conical surface, resulting in a downward force of sufficient magnitude to keep the pile from "heaving", i.e., moving vertically upward due to freezing effects in the ground.

3,703,813
LASER BEAM REFLECTOR SYSTEM

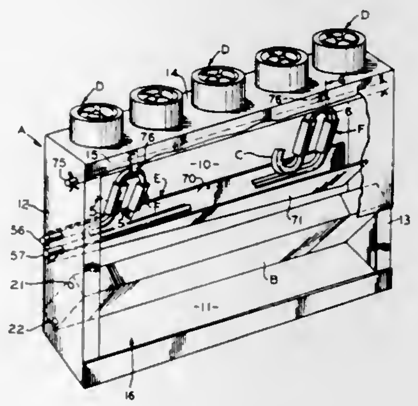
Albert Olevitch, 3100 Early Road, Dayton, Ohio, and Darrell R. James, 12007 Prospect N.E., Albuquerque,, N. Mex.
Filed Oct. 14, 1971, Ser. No. 189,285
Int. Cl. F25b *21/00*; **H01s** *3/04*
U.S. Cl. 62—3 **1 Claim**



An electrically conductive laser beam reflector is cooled by a high voltage electrostatic field created between the reflector and a probe spaced from the surface of the reflector on the same side of the reflector as the impinging laser beam. The cooling effect by the electrostatic field is of essentially the same distribution as the heating effect of the laser beam thus eliminating different and varying temperatures gradients in the reflector and the resulting distortions in the beam.

3,703,814
COLD FINGER DEHUMIDIFICATION SYSTEM

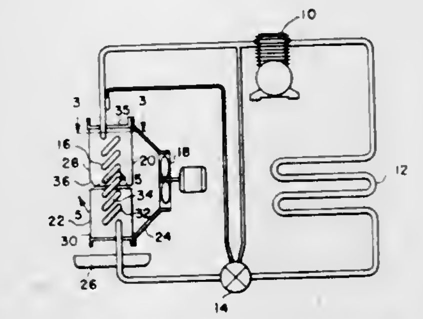
Noel Davis, Russell Township, Ohio, assignor to Integrated Development and Manufacturing Co., Chagrin Falls, Ohio
Filed June 5, 1970, Ser. No. 43,740
Int. Cl. F25d *17/06*
U.S. Cl. 62—95 **10 Claims**



A dehumidification arrangement for air in a closed circulating system wherein the air is passed at a relatively high velocity over a first cooling coil having a surface area and temperature such as to cool the air to approximately the ultimate desired temperature and thence a portion only of the air is passed at a relatively low velocity past a second cooling coil at a temperature at or below the dew point temperature of the water vapor in the air. In one arrangement, the second cooling coil is baffled so that none of the air directly impinges thereon. A much greater amount of moisture is removed with a lower cooling load on the second coil.

3,703,815
DOUBLE FIN COOLING COIL WITH CONDENSATE DIRECTOR

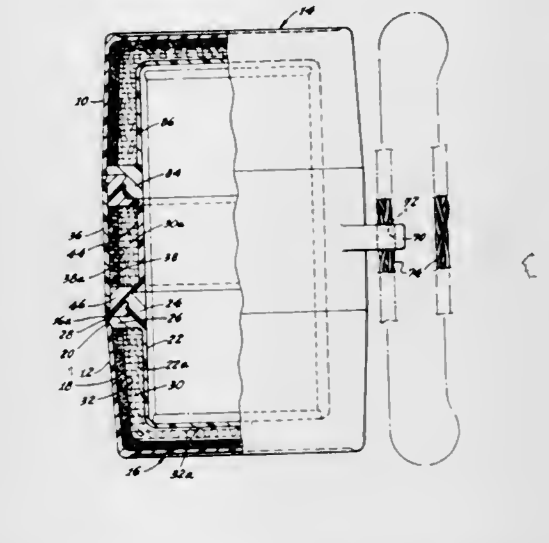
Donald C. Welch, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.
Filed Sept. 27, 1971, Ser. No. 183,880
Int. Cl. F25d *21/14*
U.S. Cl. 62—290 **9 Claims**



A compression cycle refrigeration system for cooling air is shown wherein the evaporator heat exchanger coil has two sets of fins, one set of fins being arranged above the other. The lower downstream corners of the fins of the upper set are folded over on the next adjacent fin to thereby form a series of condensate directors to cause condensate running down the downstream margins of the upper fins to transfer and adhere to the lower fins with reduced entrainment of condensate in the air passing over the heat exchange coil.

3,703,816
THERMO COLD-PAK CONTAINER

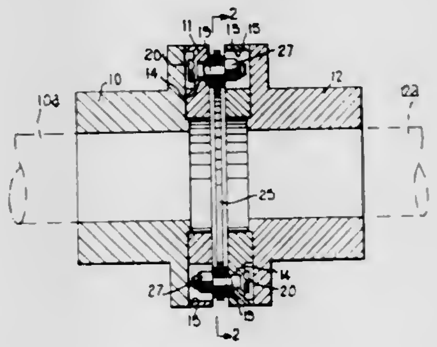
Robert E. Weathers, 11933 South Larrylyn Drive, Whittier, Calif.
Filed Oct. 15, 1971, Ser. No. 189,497
Int. Cl. F25d *3/08*
U.S. Cl. 62—457 **3 Claims**



An outer container to maintain a liquid disposed in an inner container in a highly chilled condition for a prolonged period comprising a pair of cup-like shell combinations, each including an outer shell lined with styrafoam and an inner cup-like shell suspended from the rim of the outer shell to be inserted within the thus-lined outer shell, but spaced from lined walls. Such spacing is filled with semi-solid plastic jell, such as "blue ice". Each inner cup-like shell is mounted on the rim of its outer shell by an integral outwardly flaired annular portion, the edge of which interlocks with the rim area of the outer shell, thereby containing the plastic jell. The two shell combinations are then brought together with their respective cavities disposed in registry and means are provided to interlock the rims of the shell combinations. Such means may involve some type of mating threading on the two rims, the use of an interlocking adapter, or the use of an intermediate sleeve-like member having a similar wall structure to that of the two shell combinations with appropriate end means to be secured to and in registry with the rim of each shell combination. By use of the latter, the overall axial dimension of the container may be increased to accommodate larger sized liquid or filled inner containers, or otherwise to provide a larger capacity.

3,703,817
FLEXIBLE COUPLINGS

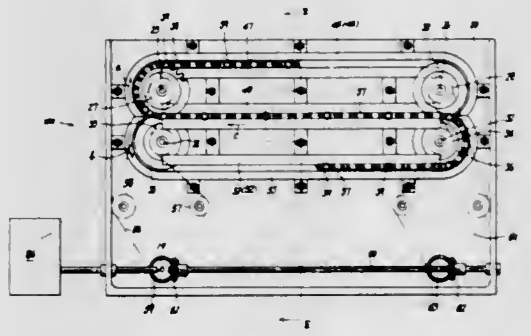
Olaf John Barclay Orwin, Birmingham, England, assignor to GIB Precision Limited, Gloucester, England
Filed Aug. 26, 1971, Ser. No. 175,297
Claims priority, application Great Britain, Aug. 26, 1970, 40,953/70
Int. Cl. F16d *8/00*
U.S. Cl. 64—13 **5 Claims**



Flexible coupling, comprising a flexible torque transmitting member connected to a pair of rotatable coaxial drive members by bolts extending axially through peripherally coned bushes seating in correspondingly coned holes in the drive members.

3,703,818
APPARATUS FOR FEEDING WARPS OR FILLING THREADS TO KNITTING MACHINE

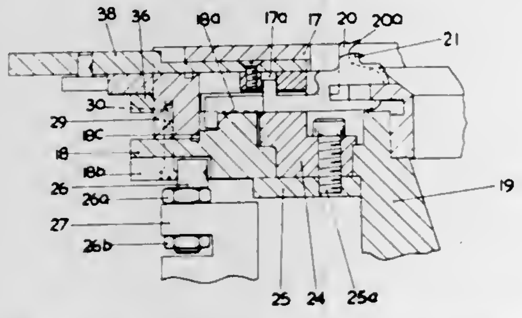
Shinobu Umeda; Yoshiaki Miyagawa; Yutaka Tanaka; Yukio Tanaka, and Ryoji Nakamura, all of Takatsuki, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Kita-ku, Osaka, Japan
Filed Dec. 21, 1970, Ser. No. 99,972
Claims priority, application Japan, Dec. 29, 1969, 45/1645; May 22, 1970, 45/43782
Int. Cl. D04b *23/06*, *23/08*, *23/10*
U.S. Cl. 66—84 R **7 Claims**



A supply thread guiding apparatus has upper and lower tracks of equal length and each having a middle straight region common to the other one, a single flexible band means is provided which is not longer than the circumference of either of the tracks and which moves along the tracks. The band means has thread guides disposed therealong at fixed intervals. Means is also provided for guiding the flexible band means alternately onto the upper and lower tracks when the leading end of the flexible band means reaches the junction of the upper and lower tracks at the end of the middle straight region. The beginning of the middle straight region is opposed to a first conveyor for carrying one of the respective ends of filling threads to one end of the knitting station of a knitting machine, and the end is opposed to a second conveyor for carrying the other ends of the filling threads to the other end of the knitting station. The arrangement is such that thread ends passed through the thread guides are delivered to thread clamps on the first conveyor at the beginning of the middle straight region and at the end thereof intermediate portions of the threads extending from the thread clamps on the first conveyor to the thread guides are delivered to thread clamps on the second conveyor.

3,703,819
CIRCULAR KNITTING MACHINES

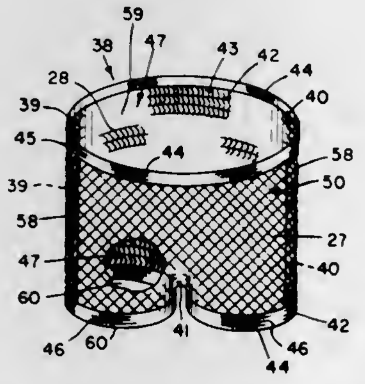
Keith Gerald Townsend, and David Arthur Harlow, both of Leicester, England, assignors to The Bentley Engineering Company Limited, Leicester, England
Filed April 20, 1970, Ser. No. 30,176
Claims priority, application Great Britain, April 26, 1969, 21,422/69
Int. Cl. D04b *9/12, 15/06*
U.S. Cl. 66—93 **4 Claims**



A circular knitting machine having latch needles, sinkers and terry instruments is provided with a cam assembly having sinker operating cams and terry instrument cams mounted to permit relative adjustment between them to vary the relative timings of the sinker and terry instrument cams. In a machine having multiple knitting stations and sinker and terry instrument cams at the different stations, these are respectively on different cam plates which are relatively adjustable, with the sinker cams engaging butts which project the opposite way to the terry instrument butts.

3,703,820
FOUNDATION GARMENT AND METHOD OF MAKING SAME

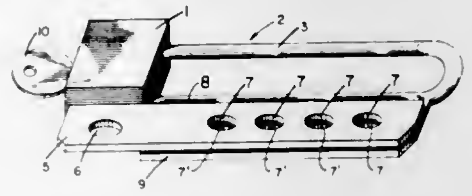
George E. Jackson, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.
Filed Sept. 24, 1970, Ser. No. 74,995
Int. Cl. A41b *9/02;* **D04b** *23/02*
U.S. Cl. 66—177 **8 Claims**



Foundation garments having a front panel of a different fabric construction than that of the rear panel are made in continuous web form on a double needle bar warp knitting machine, then cut from the web along transverse lines and inverted. One warp-knit, single fabric is power net with stretchable-retractive yarns extending wale-wise thereof to form a circumferentially stretchable rear panel in each garment. The other warp-knit, single fabric is in a simulated weave pattern and made of less stretchable warp yarns, to form a front restraint panel of woven appearance in each tubular garment, in which the "weft" portions extend axially.

3,703,821
SAFETY LOCK

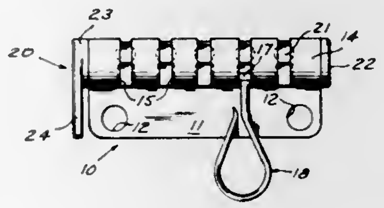
Albin E. Dorey, P.O. Box 727, Esterhazy, Saskatchewan, Canada
Filed May 20, 1971, Ser. No. 145,151
Claims priority, application Canada, May 27, 1970, 083,839
Int. Cl. E05b *67/22*
U.S. Cl. 70—38 R **6 Claims**



The invention relates to a safety lock provided with a number of apertures capable of receiving individual workmen's padlocks and controlled by a master key so that the workman may work on a machine in the sure knowledge that the power cannot be switched on inadvertently by another workman.

3,703,822
KEY HOLDER

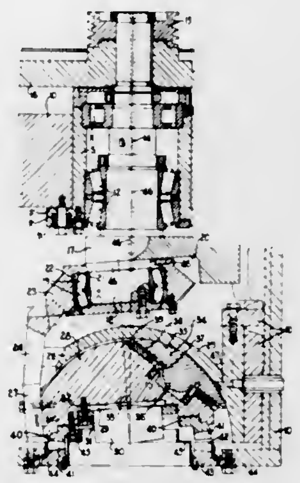
Charles W. Eisenheimer, Meriden, Conn., assignor to Prentice Corporation, Kensington, Conn.
Filed Aug. 9, 1971, Ser. No. 170,115
Int. Cl. A47g *29/10*
U.S. Cl. 70—456 B **4 Claims**



The key holder is provided with a cylindrical key hook retainer having a plurality of slots each formed to provide an aperture through which the head of a key hook may be inserted readily into the retainer, or withdrawn therefrom. Located within the retainer is a rotatable cylindrical closure also provided with slots each formed to provide an opening through which a key hook head may be inserted or withdrawn when it is aligned with an aperture of a slot in the key retainer. The closure is made of deformable material and the openings in the slots thereof are slightly smaller than the heads of the key hooks so that the latter must be forced therethrough.

3,703,823
UPSETTING OR FORGING MACHINES

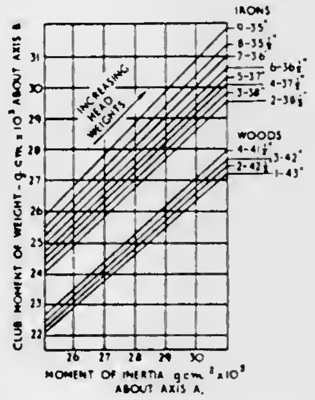
Geoffrey Wilson, Denton, England, assignor to B. & S. Massey Limited
Filed July 1, 1970, Ser. No. 51,537
Claims priority, application Great Britain, July 3, 1969, 33,511/69
Int. Cl. B21j *13/02*
U.S. Cl. 72—406 **14 Claims**



An upsetting or forging machine in which in a die set there is provided one die arranged to carry out a circular rocking motion about a point associated with the center of the die set, means being provided for adjusting the angularity of the axis of the rocking die in relation to the axis of the other die of the die set and a bearing means being provided to compensate for any changes in die dimensions due to heating and thus prevent seizing up of the dies.

3,703,824
APPARATUS FOR COMPARING MOMENTS OF INERTIA OF GOLF CLUBS

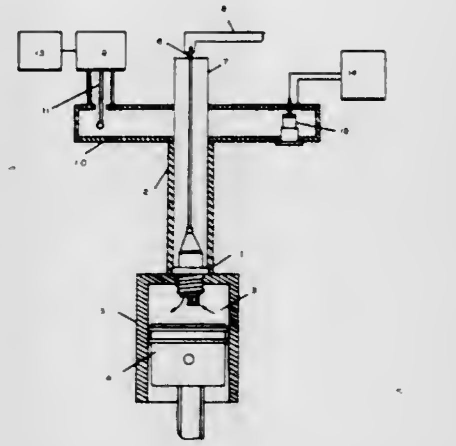
Denis A. N. Osborne, Liverpool; Robert C. Haines, Huddersfield, and John A. Kilshaw, Netherton, near Wakefield, all of England, assignors to The Dunlop Company Limited, London, England
Continuation-in-part of Ser. No. 702,668, Feb. 2, 1968, abandoned. This application May 11, 1970, Ser. No. 36,478
Int. Cl. G01m *1/12*
U.S. Cl. 73—65 **4 Claims**



A set of golf clubs is provided which is balanced on the principle of common "moment of inertia" as opposed to the prior art sets which are balanced on the principle of common "moment of weight." The moment inertia about a given axis of any club in the set is no more than 5 percent, preferably 2 percent, particularly 1 percent greater than that of the club having the lowest moment of inertia in the set. Usually the said axis is one which passes horizontally through the top end of the shaft.

3,703,825
COMBUSTION MICROWAVE DIAGNOSTIC SYSTEM

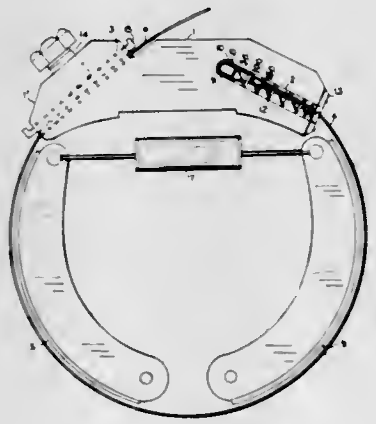
Angelo Louis Merlo, 2115 East Long Lake Road, Troy, Mich.
Continuation-in-part of Ser. No. 764,566, Oct. 2, 1968, Pat. No. 3,589,177. This application April 27, 1971, Ser. No. 137,780
Int. Cl. G01m *15/00*
U.S. Cl. 73—116 **7 Claims**



Methods to resonate the combustion chamber of internal combustion engines at radio frequencies, for the purpose of bottom dead center measurement at all available engine rpm are disclosed. Methods to employ the Q value of radio frequency resonances in combination with electron producing standard fuels for mechanical and electrical measurements within and near the combustion chamber, at all available rpm, are also disclosed. The basic system employed in the measurements comprises a turnable source of coherent radio frequency energy and a hybrid transmission line to convey the radio frequency energy into the combustion chamber. It is also used to detect the energy reflected back from the combustion chamber. The method for detecting bottom dead center requires changing the transmitted frequency so that a resonance occurs at precisely the maximum displacement of the piston during it's stroke. The method for determining the properties of materials requires a comparison between the Q value with standard electron producing fuel and the Q value of the ingredients in question.

3,703,826
BRAKE TESTING TOOL

Francis T. Burke, 590 Garnet Street, North Babylon, N.Y.
Filed Jan. 27, 1971, Ser. No. 110,120
Int. Cl. G01l *5/28*
U.S. Cl. 73—121 **2 Claims**



A steel band is adapted to be clamped on vehicle brake shoes when the brake drum has been removed for the purpose of testing the operation of the brakes. One end of the steel band is clamped with a clamp in a holding member, and the other end of the steel band is connected to the holding member with a calibrated spring scale. If the band is clamped in place on the brake shoes, when the brakes operate, the force exerted by the shoes may be read on the scale.

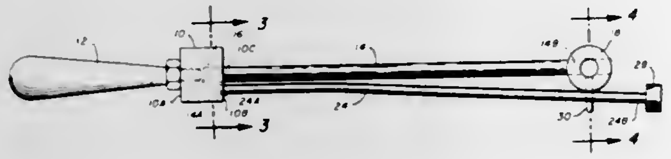
3,703,827
TORQUE WRENCH

Judson C. Cole, Tulsa, Okla., assignor to Continental Industries, Inc., Tulsa, Okla.

Filed Dec. 28, 1970, Ser. No. 101,972

Int. Cl. G01l *5/24*

U.S. Cl. 73—139 **3 Claims**



A torque indicating wrench having a body block, a handle affixed to the body block, a torque arm extending from the body block and having a socket affixed to the outer end for engaging a rotatable element, a rod affixed to the body block extending generally parallel to the torque arm, and a means at said socket for retaining the outer end of the rod in a ready position wherein the rod is flexed from its normal position and for releasing the rod from the ready position when the torque applied to the torque arm causes the outer end of the torque arm to deflect away from the rod a predetermined amount.

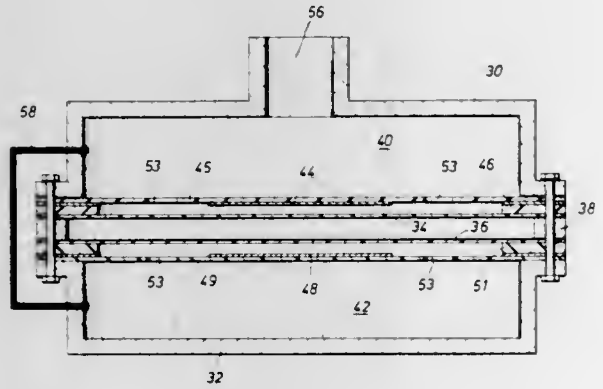
3,703,828
CAPACITANCE VARIOMETER

Edwin R. Bullard, Jr., and Wesley L. Joosten, both of El Paso, Tex., assignors to Globe Universal Sciences, Inc., El Paso, Tex.

Filed Nov. 5, 1969, Ser. No. 874,221

Int. Cl. G01c *21/00*

U.S. Cl. 73—179 **5 Claims**



An electronic variometer or rate of climb indicator of the diaphragm capacitance type, having improved sensitivity and response time. Pressure is sensed by differential pressure transducer having dual capacitor elements and a diaphragm which deflects in response to changes in pressure. A leak tube extends from a back chamber within the pressure transducer into an atmospheric chamber. The problem of non-linearity is overcome by the use of the dual capacitor elements which are connected in circuit to adjust the frequency of oscillation of a square-wave oscillator. The two channel output of the oscillator is passed through filter networks to eliminate the oscillation frequency and is then sent to a differential amplifier and displayed on a meter.

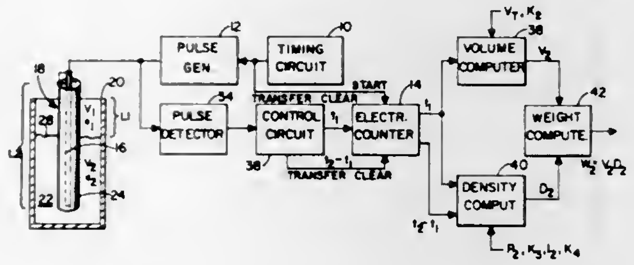
3,703,829
LIQUID QUANTITY GAGING SYSTEM

William R. Dougherty, St. Anthony Village, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed April 19, 1971, Ser. No. 135,096

Int. Cl. G01f *23/28*

U.S. Cl. 73—290 R **10 Claims**



Pulses are applied to the upper end of an electrical transmission line sensor mounted in a fluid container or tank. Each pulse is reflected at the surface of the fluid, because of the change in dielectric constant which changes the characteristic impedance of the transmission line, and again at the lower end of the transmission line which is not terminated in its characteristic impedance. The volume of fluid in the tank is a function of time delay, *t*1, associated with the surface-reflected pulse. The density of the fluid is a function of time delay *t*1 and another time delay, *t*2–*t*1, associated with the pulse reflected from the lower end of the transmission line and with respect to the surface-reflected pulse. The weight of fluid in the tank is the product of the volume and density functions.

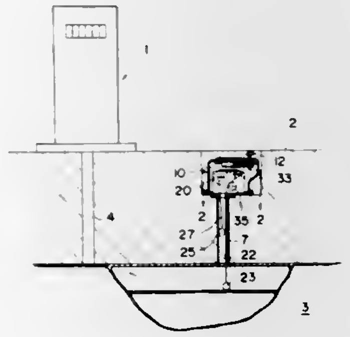
3,703,830
DIRECT-READING GASOLINE METER WITH BOB AND FLOAT CONTROL OF MEASURING TAPE

Sozaburo Maeshiba, 33-32, 4-chome, Hakataekimae, Fukuoka, Fukuoka Prefecture, Japan

Filed Sept. 11, 1970, Ser. No. 71,618

Int. Cl. G01f *23/08*

U.S. Cl. 73—321 **4 Claims**



A direct-reading meter for measuring the contents of gasoline tanks and the like with a direct-reading tape controllably payed out and taken up by a take-up spool under control of a bob suspended on a chain. The meter is used to convert existing stick or rod measuring systems to direct reading.

3,703,831
FLEXURE BEARING WITH LOW ROTATIONAL RESTRAINT

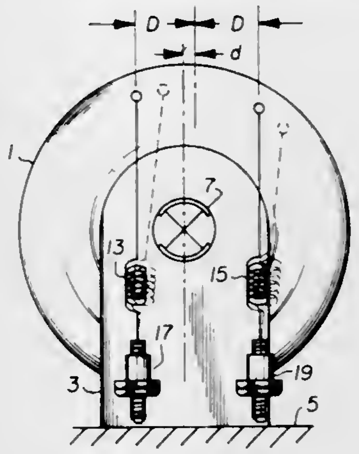
David J. Schauffler, Orange, N.J., assignor to The Bendix Corporation

Filed Dec. 2, 1969, Ser. No. 881,347

Int. Cl. G01c *19/16*

U.S. Cl. 74—5 **9 Claims**

A bearing having flexure members for supporting an instrument and providing for limited rotation thereof. A plurality of spring members are arranged for exerting moments on the instrument the sum of which provides an anti-restraining moment to oppose a restraining moment exerted thereon by the flexure members. Each spring member includes means for adjusting the spring force exerted thereby to make the restraining and anti-restraining moments substantially equal even at zero rotation.



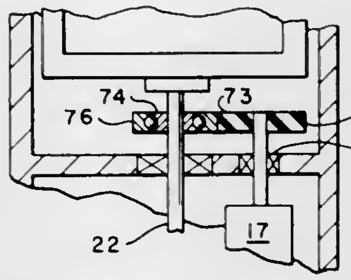
3,703,832
ROTOR TILT

James M. Lindsey, Houston, and Thomas W. Stell, Fort Bend, both of Tex., assignors to Sperry-Sun Well Surveying Company, Sugar Land, Tex.

Filed May 18, 1970, Ser. No. 38,263

Int. Cl. G01c *19/30*

U.S. Cl. 74—5.45 **7 Claims**



A system for controlling the tilt of a rotor on a gyro includes a sensing device on the rotor housing for detecting tilt, together with light generating devices mounted on opposite sides of the rotor housing and responsive to the tilt detecting device. Light sensors are mounted on the gyro housing and are responsive to light from the light generating devices on the rotor housing. The light detecting devices provide a control signal to a torqueing motor to apply a corrective force to the gyro system. The torque motor is continuously operated, and will rotate in a first direction until a signal is received from at least one of the light sensing devices, whereupon the direction of rotation reverses until light is not detected by one of the sensors. Use of light activated control system to transmit the error signal obviates the use of any friction-producing physical attachment with the components of the gyro in order to transmit such error signal to the torque motor control system.

3,703,833
DIFFERENTIAL MOTION MAGNIFYING MECHANISM

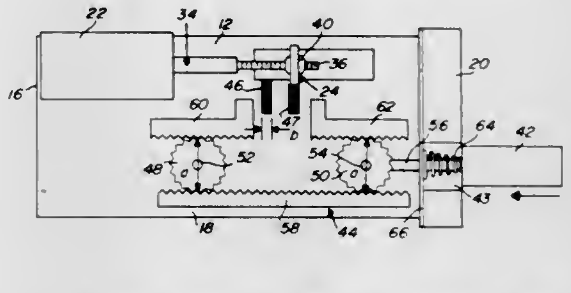
Emery E. Olah, Des Plaines, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed May 14, 1971, Ser. No. 143,507

Int. Cl. F16h *19/04*

U.S. Cl. 74—10.39 **11 Claims**

A pushbutton operated mechanism for adjusting the tuning apparatus of a pushbutton type radio receiver, includes a pair of gears, one of which is rotatably mounted on a fixed shaft and the other of which is rotatable on a shaft generally parallel to the shaft of the first gear and movable along a path toward and away therefrom. First and second racks, each engaging a gear, are separated from each other along a path. A pushbutton coupled to the movable gear, when depressed, causes the racks to be moved together along the path toward a fixed marker position therebetween at a preselected setting. A movable control element of the tuning apparatus, also positioned between the racks, is moved thereby to the preselected marker setting in response to the depression of the pushbutton.



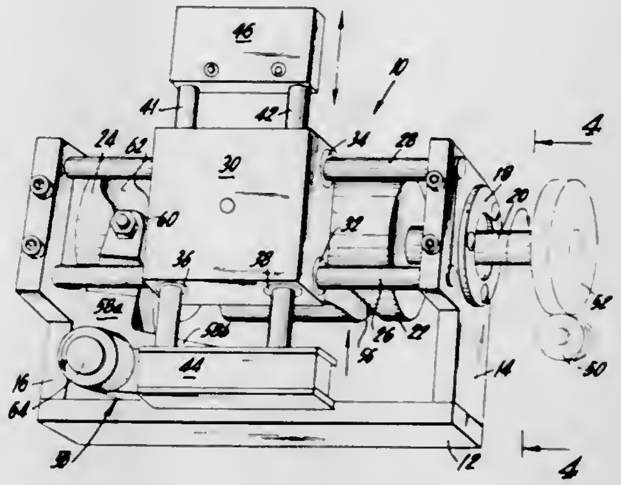
3,703,834
DEVICE FOR TRANSMITTING CONTROL TRANSLATORY MOVEMENTS

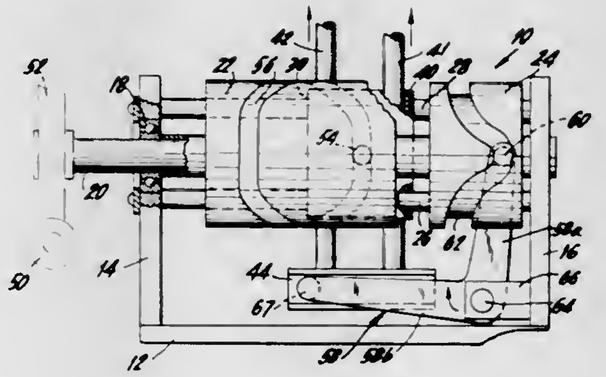
Earl F. Beezer, One Andrea Boulevard, Saddle Brook, N.J.

Filed Jan. 25, 1971, Ser. No. 109,229

Int. Cl. F16h *25/12*

U.S. Cl. 74—57 **12 Claims**

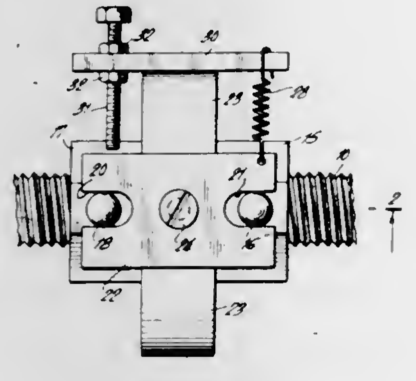




A device for transmitting accurate movements from a rotary input shaft to a movable end or top plate member or vice versa includes a longitudinal, (X-direction) guide for a movable block member which carries a follower which is engaged with a groove of a rotary cam and which also provides a slideway for a top plate or end plate member for movement in transverse (Y directions). The transverse movement is guided by a second cam mounted for rotation about the same axis as the first cam and which transmits the transverse movement to the transversely movable plate member through a rocker arm.

3,703,835
MEANS FOR TAKING UP SLACK IN LEAD SCREW DEVICES

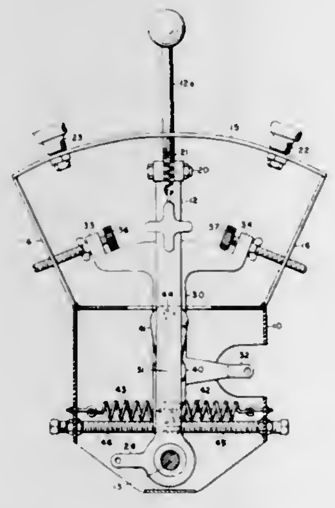
Charles A. O'Connor, 100 Sunnyhill Drive, E. Norwich, and Richard J. Maehr, 4 Chelsea Place, Huntington, both of N.Y.
Filed Aug. 27, 1970, Ser. No. 67,484
Int. Cl. F16h *55/18*
U.S. Cl. 74—441 **9 Claims**



A spaced double nut combination mounted upon a lead screw and coupled to a movable table for reducing the nut backlash to zero. The two nuts are rotatably linked to each other by a spring loaded rockable yoke. The yoke acts to move the nuts to eliminate backlash on the lead screw. Binding action between the nut combination and the lead screw is prevented by the differential frictional contact between the nuts and the screw.

3,703,836
CONTROL APPARATUS

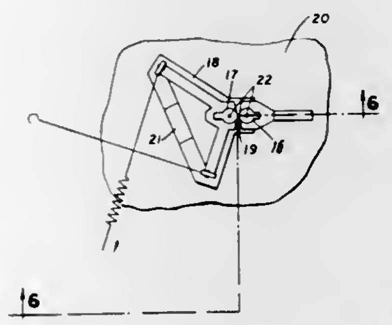
Warren C. Kiser, Bedford, Tex., assignor to Shovel Supply Co., Inc., Dallas, Tex.
Filed Oct. 23, 1970, Ser. No. 83,528
Int. Cl. G05g *9/08*
U.S. Cl. 74—471 R **5 Claims**



Disclosed is an apparatus for operating two control devices with a single hand operated lever. The hand lever is pivotally mounted for movement to forward and reverse positions from a neutral position to operate one control device directly. During a portion of its pivotal movement on either side of neutral it does not influence the second control device, but upon further displacement from neutral it engages a second lever pivotally mounted in coplanar relation with the hand lever to displace the second lever from its neutral position. The second lever is resiliently biased toward its neutral position so that it returns to it as the hand lever is moved toward its neutral position.

3,703,837
ARTICLE FOR USE IN SOUND RECORDING AND REPRODUCING INSTRUMENTS

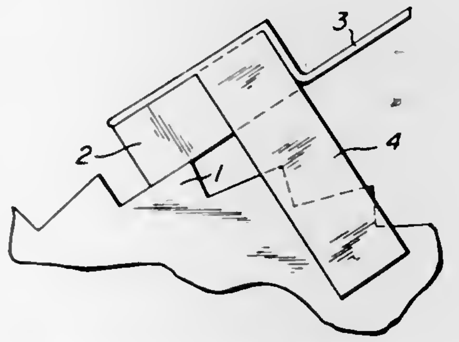
Klaus Westphal, Berlin, Germany, assignor to Telefunken Patentyerwertungsgesellschaft m. b. H., Ulm/Donau, Germany
Continuation of Ser. No. 701,948, Jan. 31, 1968, abandoned. This application Dec. 15, 1970, Ser. No. 98,435
Claims priority, application Germany, May 10, 1967, T 33829
Int. Cl. G05g *1/04*
U.S. Cl. 74—519 **4 Claims**



An article of manufacture for use in sound recording and/or reproducing apparatus which is formed, by injection-molding, from a thermoplastic synthetic material. The article is formed into chassis and lever portions; the lever portions being pivotable with respect to the chassis portion about a pivot axis provided in a means connecting the lever portions to the chassis.

3,703,838
AN IMPROVED PAWL

Yuki Tsuruishi, Nagano, Japan, assignor to Kabushiki Kaisha Suwa Seikasha, Tokyo, Japan
Filed Jan. 29, 1971, Ser. No. 110,958
Claims priority, application Japan, Feb. 2, 1970, 45/8571
Int. Cl. F16h *19/08*
U.S. Cl. 74—575 **3 Claims**



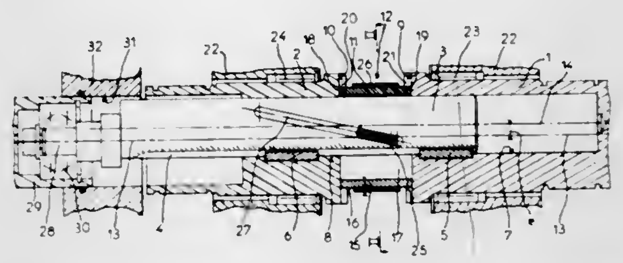
An arm holds a pallet jewel against a ratchet wheel which is thinner than the pallet jewel, and the arm is fitted with fingers which lie on either side of, but do not touch, the ratchet wheel. In case of mechanical shock to the system in a direction transverse to the ratchet wheel, the fingers come into contact with the face of the wheel and prevent disengagement of the jewel from the wheel.

3,703,839
VARIABLE-THROW CRANKPIN CRANKSHAFT

Auguste Velinde, Wicres, France, assignor to Verlinde S. A., Loos, France
Filed Feb. 9, 1971, Ser. No. 113,847
Claims priority, application France, Jan. 21, 1970, 7002073
Int. Cl. F16c *3/28*
U.S. Cl. 74—600 **6 Claims**

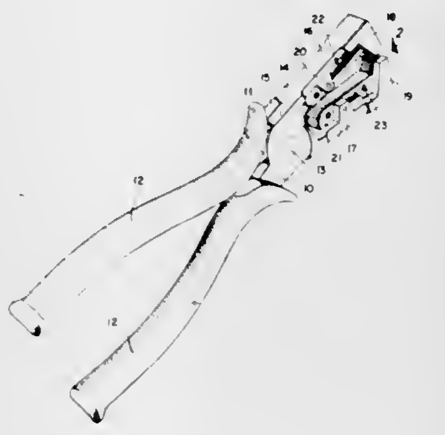
A crankshaft the crankpin consisting of a ring which has a throw variable from zero to several millimeters, and can transmit a relatively high torque value and withstand considerable

stress applied at variable angles without buckling while permitting any desired adjustment of the crankpin throw during the crankshaft operation. The crankshaft comprises to this end a two-section hollow shaft with an intermediate rod engaging the bores of the shaft sections and, between these sections, a crankpin forming ring having a longitudinal cavity of elongated cross-sectional configuration and a width at least equal to the rod diameter and a major dimension at least equal to this diameter ; a diametral pin is locked to this ring by an outer sleeve which pin engages an oblique port formed in the rod whereby a change in the throw of the crankpin-forming ring is obtained by causing an axial movement of the rod.



3,703,840
WIRE STRIPPER

Walter Kauf, 35 Kassel, AM Felsenkeller 26, Germany
Filed June 21, 1971, Ser. No. 154,906
Int. Cl. H02g *1/12*
U.S. Cl. 81—9.5 R **4 Claims**

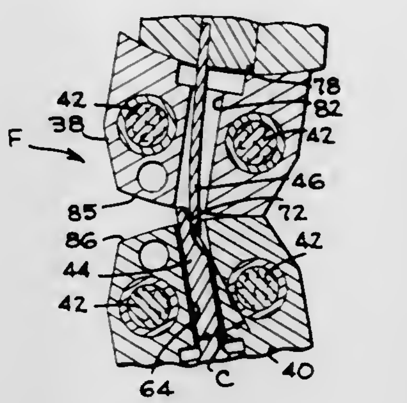


A wire stripper having a pair of relatively movable jaws provided with a plurality of thin blade-like members mounted on spring arms so that they may flex, and move relative to one another when closed around a piece of metal such as a wire. The spring means is such that the blade-like members will sever any electrical insulation around such wire, but will not sever the wire.

3,703,841
ROTARY SHEAR FOR WRAPPING MACHINES

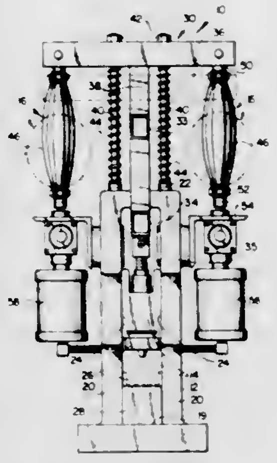
Donald C. Crawford, Green Bay, Wis., assignor to FMC Corporation, San Jose, Calif.
Filed Feb. 2, 1970, Ser. No. 7,718
Int. Cl. B26d *1/28*
U.S. Cl. 83—341 **6 Claims**

A wrapping machine cutting head of the rotary shear type wherein the lateral contact force between the shearing blades is effected by a camming surface, integral with one of the shearing blades, to laterally flex a resiliently flexible blade against a rigid blade as the two blades move into shearing relation with each other and with the web material intermediate two interconnected packages wrapped and sealed in the web.



3,703,842
PNEUMATIC PRESS

John M. Yarlott, West Bare Hill Rd., and John C. Gray, Bolton Road, both of Harvard, Mass.
Filed Oct. 7, 1970, Ser. No. 78,683
Int. Cl. B16d *5/08;* **B30b** *1/32*
U.S. Cl. 83—524 **16 Claims**

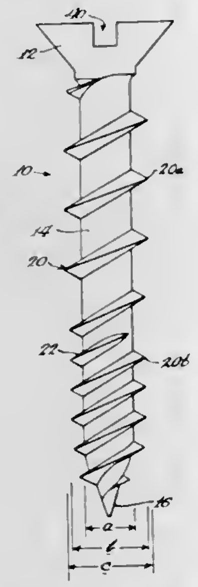


A pneumatic punch press having a frame including a bed adapted to support one press tool and a ram adapted to carry another press tool and supported on the frame for vertical reciprocable movement relative to the bed. The ram is biased away from the bed by a pair of parallel springs and is moved in the direction thereof by a pair of parallel fluid actuators connected between the frame and the ram. Oeach actuator has a hollow, flexible, thin-walled shell defining a pneumatic fluid chamber of variable volume. A pneumatic control circuit provides fluid connection between each of the chambers and a source of pneumatic fluid pressure whereby pressure in each chamber may be varied to expand each shell in one direction and contract it in another direction to effect movement of the ram toward the bed. In accordance with another embodiment of the invention, a plurality of fluid actuators connected in series and end-to-end relation effect movement of a ram.

3,703,843
FASTENER WITH IMPROVED THREAD CONSTRUCTION

Richard C. Laverty, Schaumburg, Ill., assignor to MSL Industries, Inc.
Filed Jan. 4, 1971, Ser. No. 103,637
Int. Cl. F16b *25/00, 39/30*
U.S. Cl. 85—46 **4 Claims**

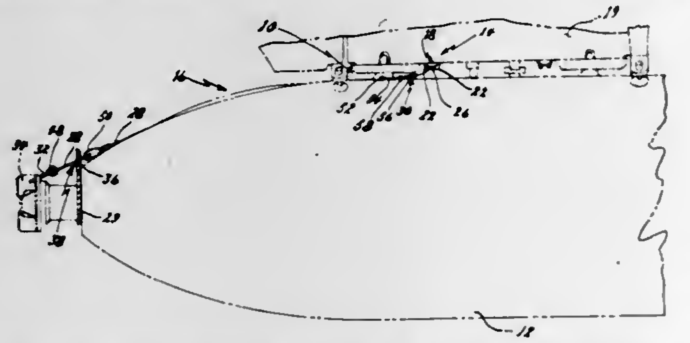
A fastener having a shank divided into first and second portions respectively located adjacent a head end and a tapered pointed end with the first portion having a single thread formed thereon of uniform pitch. A multiple of parallel threads of similar uniform pitch are formed on the second portion of the shank and one of the threads on the second portion is a continuation of the thread on the first portion. All of the threads have a substantially uniform minor diameter while the major diameter of the upper single thread portion is greater than the major diameter of the lower multiple thread portion.



3,703,844
ARMING UNIT

Roy H. Bleikamp, Jr., Edwardsville, Ill., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Dec. 2, 1970, Ser. No. 94,348
Int. Cl. B64d *1/04*
U.S. Cl. 89—1.5 D **5 Claims**



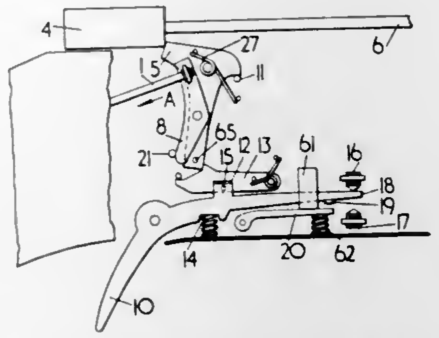
An arming unit which is capable of releasing in the armed or unarmed position a weapon. This arming unit is made up of an arming wire connected at one end to the weapon and at the other end to a locking member which is releasably secured to an aircraft. A uniquely designed spring loop and plate arrangement of the arming wire allows for arming of the weapon and then subsequent release of the arming wire along with the weapon from the locking member. If desired, however, the arming wire and locking member may also be released together with the weapon in the unarmed position.

3,703,845
SMALL ARMS WEAPON AND SMALL ARMS RANGES

David Charles Lambert Griew, 45 Gloucester Road, Richmond, England

Filed July 17, 1970, Ser. No. 47,554
Int. Cl. F41j *1/20*
U.S. Cl. 89—134 **12 Claims**

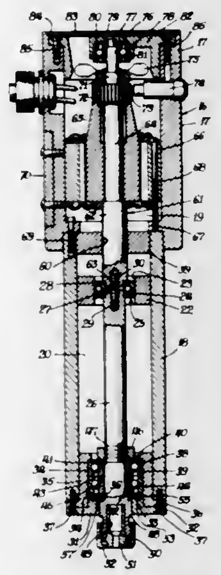
A small arms range has at least one weapon, a target, and at least one transmitter which transmits a beam in the general direction of the or each weapon. The or each weapon has a receiver connected to an interlock system which prevents the weapon being fired unless the receiver is receiving a beam. The range is encircled by a guard beam the receiver of which is also connected to the interlock system. The interlock system prevents the weapon being fired as soon as anyone enters the range.



3,703,846
MACHINE TOOL SPINDLE AND DRIVE

Lewis E. Krafft, 10 Gromer Road, Elgin, Ill.

Filed Nov. 16, 1970, Ser. No. 89,630
Int. Cl. B23c *1/00*
U.S. Cl. 90—11 A **20 Claims**



A machine tool includes a housing having a drive spindle rotatably supported therein by bearing means including a lower bearing and an intermediate bearing. The spindle is provided with a tool holder or chuck projecting outwardly at the housing and a labyrinth type seal cooperates with a removable cap to effectively seal the lower portion at the housing. An armature shaft is supported at its lower end on the intermediate bearing and is removably connected to said spindle by a threaded bore and stud arrangement to provide an effectively balanced shaft and spindle assembly. The armature is easily replaced and assembled through the upper end of the housing which has removably connected thereto a cap which supports a third bearing rotatably supporting the upper end of the armature shaft.

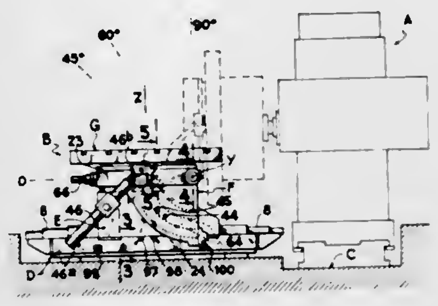
3,703,847
SUPPORT DEVICE FOR MACHINING WORKPIECES

Maurice Pillot, Etupes, and Louis Kilian, Montbeliard, both of France, assignors to Automobiles Peugeot, Paris and Regie Nationale des Usines Renault, Billancourt, France

Filed July 28, 1970, Ser. No. 58,844
Claims priority, application France, Aug. 1, 1969, 6926560
Int. Cl. B23q *1/04*
U.S. Cl. 90—58 C **23 Claims**

Support device for machining workpieces comprising three parts, namely : a fixed bed, a saddle slidable on the bed in a first direction, a chassis pivotable on the saddle about a first

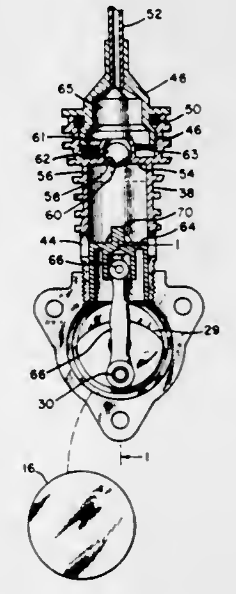
axis orthogonal to the first direction and a table rotatable on the chassis about a second axis orthogonal to the first axis. Means are provided for relatively moving the three parts. Locking means maintain the parts in given positions relative to each other. Weight compensating means are interposed between the saddle and bed and between the table and chassis for compensating variations in the forces exerted by the workpiece on the bed and on the chassis in different regions, for example due to an overhanging position of the workpiece relative to the chassis or bed.



3,703,848
FLUID PRESSURE ENGINE

William L. Brown, 4th, P. O. Box 77, Pine Grove Mills, Pa.

Filed Sept. 14, 1970, Ser. No. 72,030
Int. Cl. F01l *15/14, 21/02, 31/08*
U.S. Cl. 91—265 **8 Claims**

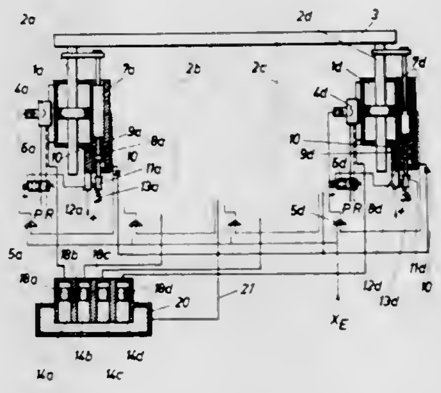


This invention is an improved engine operated by gas under pressure having an improved valve guide, lubrication system, speed adjustment device, wrist pin, gas storage area, hollow crank shaft, and O-ring seal for the cylinder head. These improvements are positioned on a miniature engine capable of being used on tiny model airplanes, other power toys or the like.

3,703,849
MULTIPLE UNIT, HYDRAULIC ACTUATOR

Eskhard Renner, A·:him, and Udo Linnenbecker, Bremen, both of Germany, assignors to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremen, Germany

Filed June 3, 1971, Ser. No. 149,614
Claims priority, application Germany, June 13, 1970, P 20 29 287.9
Int. Cl. F15b *11/16, 13/16*
U.S. Cl. 91—412 **18 Claims**

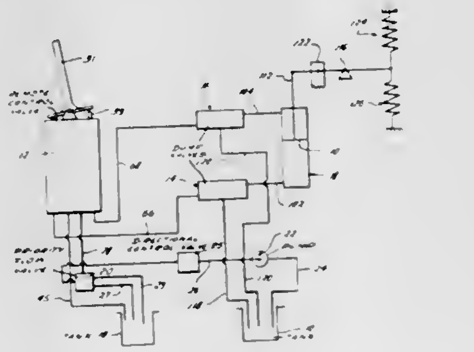


A multiple unit, hydraulic actuator system with servo feedback control of each unit and superimposed pressure balance control so that for each common input command pressure in all units is equalized to an average value.

3,703,850
HYDRAULIC CONTROL SYSTEM

Don R. Honeycutt, Bryan, Tex., assignor to Redman Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 639,360, May 18, 1967, abandoned. This application April 3, 1970, Ser. No. 37,358
Int. Cl. F15b *9/08*
U.S. Cl. 91—446 **15 Claims**



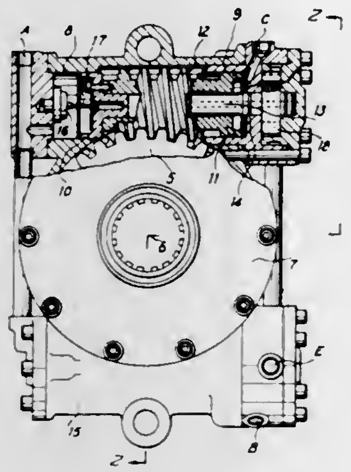
The present invention relates to hydraulic control systems and in particular to a method and means for improving such systems used in remote control apparatus. The present invention utilizes dump valves positioned relatively close to the apparatus controlled by the hydraulic fluid for quickly removing from the system returning hydraulic fluid, thereby eliminating the problems that would develop in attempting to move this fluid back through a substantial length of the system and providing a faster response time.

3,703,851
HYDRAULIC ACTUATOR

Richard Joseph Ifield, and William Robert Ifield, both of Carters Road, Dural, Australia

Filed Dec. 23, 1970, Ser. No. 101,089
Claims priority, application Australia, Jan. 6, 1970, 0018
Int. Cl. F01b *3/00*
U.S. Cl. 92—33 **5 Claims**

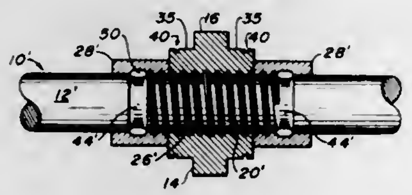
A hydraulic actuator for producing translational movement over a long distance having two jack cylinders with pistons mounted for reciprocal movement and connected to a worm wheel through a worm gear. When a piston is driving, the worm gear acts as a rack to turn the worm wheel and when a piston is being returned to its starting position the worm gear rotates. Means are provided to alternately switch from one cylinder to the other.



3,703,852
PISTON AND ROD ASSEMBLY FOR PISTON AND CYLINDER DEVICES

Morgan, Richard M., Chicago, Ill., assignor to Miller Fluid Power Corporation, Bensenville, Ill., a corporation of Illinois

Filed Aug. 13, 1970, Ser. No., 63,461
Int. Cl. F16j *1/12*
U.S. Cl. 92-258 1 Claim

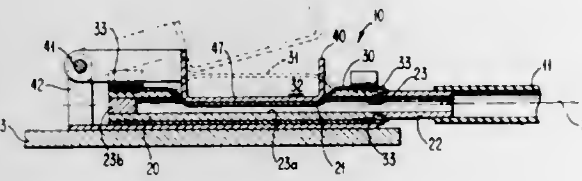


In the field of precision hydraulic and pneumatic power systems, a piston to piston rod mounting utilizing the cylindrical smooth rod surface and the smooth piston bore to hold concentricity and squareness of the piston to the rod and utilizing a helical retainer wire threaded between the piston and rod, and a locking composition to fasten the assembly in intended position.

3,703,853
COMPACT FLUID ACTUATOR AND METHOD OF MAKING IT

Donald J. Steger, Corinth, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 16, 1970, Ser. No. 98,775
Int. Cl. F01b *19/00*
U.S. Cl. 92—92 10 Claims

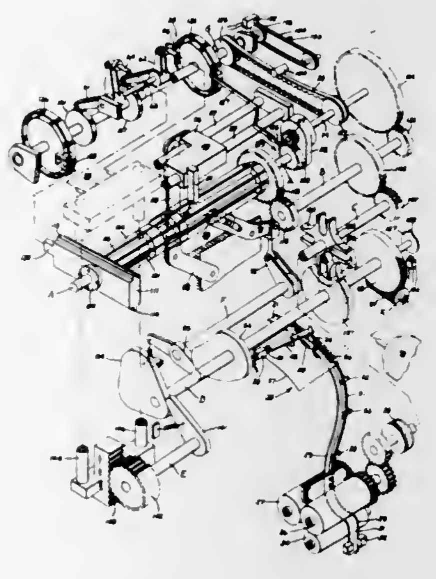


A compact fluid powered actuator is constructed from a flexible tube assembled over a rigid core. The actuator includes an expansible chamber formed between the tube and the core. The chamber is bounded by naturally efficient and lowly stressed seals at the ends of the tube which tightly match the periphery of the core. This construction lends itself to mass production methods wherein a long core is assembled with a long tube enabling a plurality of actuators to be manufactured simultaneously.

3,703,854
METHOD FOR PRECISELY FORMING AND PLACING INSULATION IN THE SLOTS OF MAGNETIC CORES

Leo M. Schlaudroff, Fort Wayne, Ind., assignor to General Electric Company

Filed May 18, 1971, Ser. No. 144,425
Int. Cl. B31d *5/02;* **B31f** *7/00*
U.S. Cl. 93—1 G 5 Claims

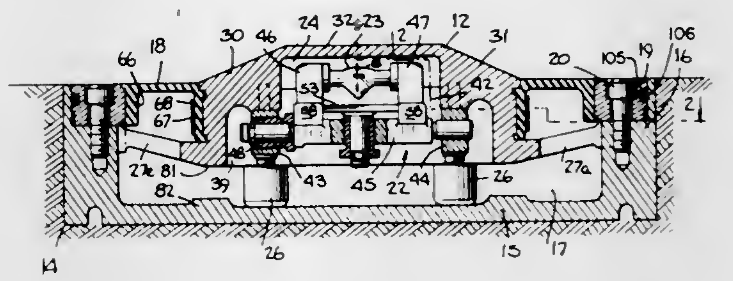


Apparatus and method for accurately sizing pieces of insulation and for placing formed pieces of insulation into slots of a magnetic core. Dielectric strip material is fed to a sizing and forming station by a strip accumulating and urging device, and dielectric material pieces of preselected sizes are precisely formed. The core is precisely aligned relative to the forming member so that the insulation pieces may be inserted into a core slot which the insulation piece has been particularly formed to fit. Preferred form of apparatus includes constant force mechanisms for accurately returning strip material length determining, severing, and forming mechanisms to respective dwell positions; positive acting cams, e.g., conjugate and face cams, in selected mechanism drive trains; and positively controlled compensating means for selectively positioning a core support relative to a datum plane of the apparatus. Means in the form of relatively movable pressure bars are urged, by constant force mechanisms, toward forming devices having different sizes and shapes to form insulators there against. In another embodiment, a modified guide ring for forming and inserting devices is provided.

3,703,855
RECESSIBLE FIXTURE SUPPORT

Victor E. Converso, 77 Seventh Avenue, New York, N.Y.
Continuation of Ser. No. 785,482, Dec. 20, 1968, abandoned.
This application Dec. 27, 1971, Ser. No. 212,480
Int. Cl. E01c *23/16*
U.S. Cl. 94—1.5 14 Claims

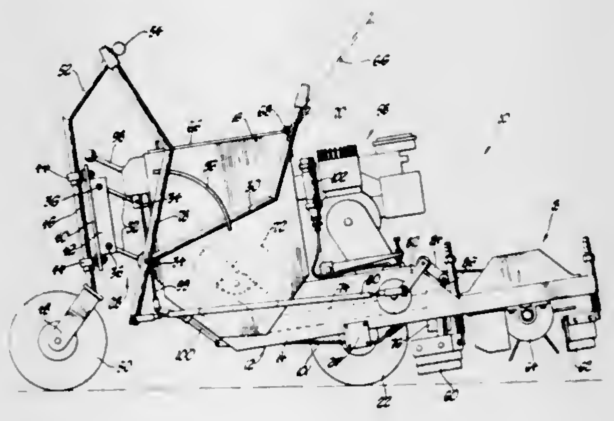
A supporting receptacle is embedded with the annular rim flush with the embedding surface. A conically shaped lamp support is attached to a mounting ring secured to the rim or the receptacle by an annular resilient diaphragm and is normally positioned with the lamp and conical surfaces above the embedded rim and a body portion recessed within the receptacle. The body portion has radial extending means distributed circumferentially around the lamp support for engaging the rim to conduct heat away from the lamp support and for engaging the receptacle to pivot the lamp support into a recessed position on the passing of a moving member.



3,703,856
SEAL COATING MACHINE

David C. Wikel, Sandusky, and Rymer H. Smith, Burgoon, both of Ohio, assignors to Wikel Manufacturing Co., Inc., Sandusky, Ohio

Filed Jan. 22, 1971, Ser. No. 108,825
Int. Cl. E01c *19/12*
U.S. Cl. 94—44 7 Claims



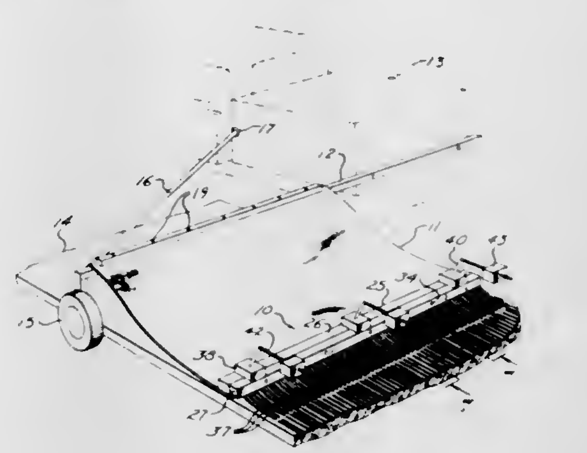
An asphalt sealing machine for applying a sealer coating to asphalt paving or the like. The machine includes a body having a tank for storing fluid and a spreader means including two spaced scrapers and a rotary spreader to which fluid is dispensed from the tank. A pair of spaced wheels movably support the body and are connected to the body for rotation about an axis. A second or dirigible wheel is operatively connected to the tank by positioning means. The dirigible wheel is on one side of the axis of the first pair of support wheels and the spreader means is on the opposite side of the axis. The positioning means interconnecting the tank and the dirigible wheel include a pair of spaced parallel links and a lever arm connected thereto which may be pivoted to raise and lower the tank to thereby raise and lower the spreader means from a position engaging the surface over which the machine moves to a position spaced above the surface.

3,703,857
HIGHWAY SLOTTING DEVICE

Alan G. MacKinnon, Newcomerstown, Ohio, assignor to The W. M. Brode Company, Newcomerstown, Ohio

Filed July 2, 1971, Ser. No. 159,152
Int. Cl. E01c *19/22*
U.S. Cl. 94—45 15 Claims

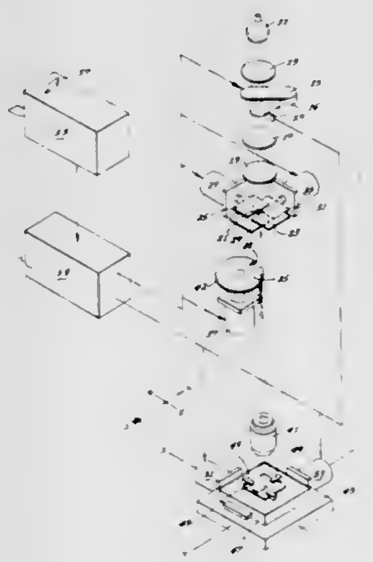
There is disclosed herein an elongated member disposed transversely of a lane of newly poured concrete and dragged forwardly lengthwise of the lane while in such transverse position, the elongated member having a multiplicity of closely spaced, parallel, flexible rods projecting rearwardly at a slight downward angle and pressing resiliently into the plastic concrete and progressively forming slots therein, the elongated member also having adjustable counterweights projecting above the rods and sustaining a downward pressure on the rods.



3,703,858
APPARATUS FOR PREPARING MASTER RETICLES

Peter S. La Canfora, Santa Barbara, Calif., assignor to Gyrex Corporation, Santa Barbara, Calif.

Filed Aug. 31, 1970, Ser. No. 68,182
Int. Cl. G03b *29/00*
U.S. Cl. 95—12 4 Claims



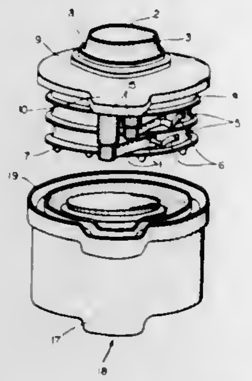
A pattern generator comprising a light source from which light rays are directed past a shutter and an adjustable optical slit for delivery to a precision reduction lens which exposes a high resolution photographic plate mounted on a movable mounting fixture. An alphanumeric disk is positioned between the optical slit and the reduction lens so that, if desired, a character or number may be imaged onto the photographic plate.

3,703,859
DAYLIGHT FILM DEVELOPING TANK

Mamoru Katsuragi, Izumi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed April 13, 1970, Ser. No. 27,849
Int. Cl. G03d *1/14*
U.S. Cl. 95—90.5 5 Claims

A daylight developing tank of roll films for simultaneously developing a plurality of comparatively short roll films. The tank includes a spool having a plurality of film-holding grooves, each of which grooves holds a film only at the upper and lower edges thereof. Film retainers are secured to the film-holding grooves, respectively, for retaining the outermost end of each film being loaded in a cassette, which cassette is disposed adjacent the spool during the development.



3,703,860
APPARATUS FOR PHOTOGRAPHIC PROCESSING

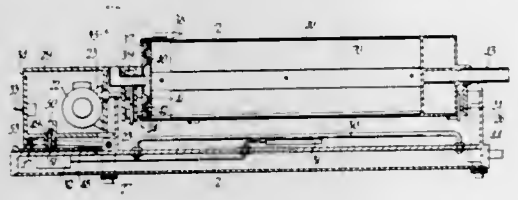
Peter R. S. Wilkinson, 2 Glade Close, Ditton Hill, Surbiton, Surrey, England

Filed May 26, 1970, Ser. No. 40,670

Claims priority, application Great Britain, June 4, 1969, 28,217/69

Int. Cl. G03d *3/08*

U.S. Cl. 95—93 **15 Claims**



A drum photographic processer is provided to rotate horizontally but to be tilted to evacuate processing solution while still being rotated. The direction of rotation may be changed as well as the degree of tilting. A longitudinal slot within the drum serves to engage a leading edge of photographic film being processed and to assist in the desired flow of processing solution. Various devices to cause automatic evacuation of processing solution or tilting the drum are described.

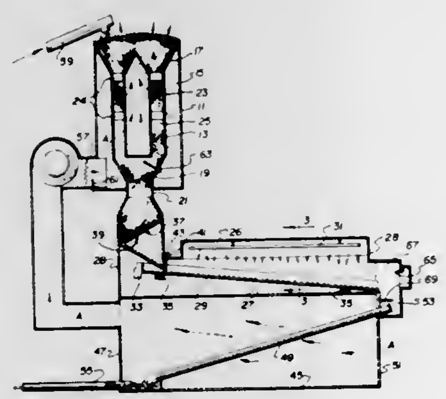
3,703,861
RAW ORGANIC MATERIAL COOKER

Vaughn H. Slack, Wingham, Ontario, and Gilliaan Peter Koens, Mississauga, Ontario, both of Canada, assignors to Farm Automatic Feeding Limited, Gorrie, Ontario, Canada

Filed June 25, 1971, Ser. No. 156,815

Int. Cl. A23k *1/00*

U.S. Cl. 99—443 **8 Claims**



An apparatus for heat treating particulated organic material consisting of a preheating chamber, a roasting chamber operatively connected to the heating chamber, and a cooling chamber operatively connected to the roasting chamber; the preheating chamber having a hot air inlet, a preheating container in communication with the hot air inlet, a material inlet to the container and a material outlet from the container; the roasting chamber having a vibratory tray and heating elements above the tray such that the preheated material can flow along the tray while being roasted; and the cooling chamber having a trough which collects roasted material from the roasting chamber and transports it to an outlet, and a cool air inlet and warm air outlet for passing air around the roasted material.

3,703,862
WORK PRESSURE ROLLING ASSEMBLY

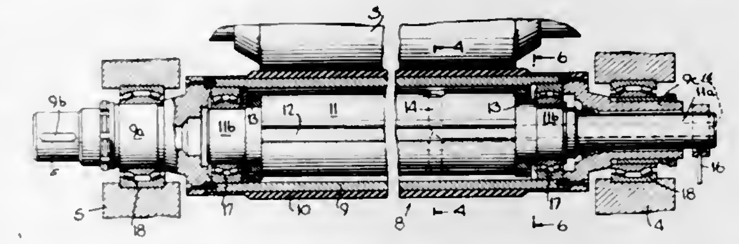
Valentin Appenzeller, Kempen/Niederrhein, Germany, assignor to Edward Kusters Maschinenfabrik, Krefeld, Germany

Continuation-in-part of Ser. No. 375,237, June 15, 1964. This application Oct. 21, 1966, Ser. No. 588,571

Claims priority, application Germany, June 25, 1963, K 50053

Int. Cl. B30b *3/04*

U.S. Cl. 100—162 B **7 Claims**



A controlled deflection roll has a relationship of the frame structure which mounts it and the roll structure itself which allows the internal beam of the roll to be anchored and the source of power to the shell of the roll to be located outside of the frame structure.

3,703,863
DISCONNECT ARRANGEMENT FOR MULTI-UNIT PRINTING PRESS

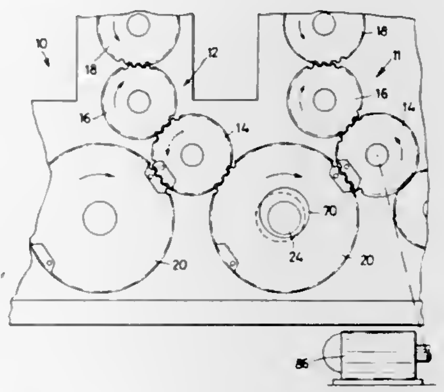
Pietro Giuliuzza, Milan, Italy, assignor to O.M.C.S.A. Officine Meccaniche Cigardi S.p.A., Milan, Italy

Filed June 14, 1971, Ser. No. 152,852

Claims priority, application Italy, June 8, 1971, 25600 A/71

Int. Cl. B41f *7/04, 21/04*

U.S. Cl. 101—183 **9 Claims**



A disconnect arrangement for a multi-unit press in which the transfer cylinder is supported on eccentrics which, when actuated, bodily shift the axis of the transfer cylinder a distance sufficient to separate the transfer cylinder gear teeth from the teeth of an adjacent gear in the gear train and in which the normally stationary gripper cam for the transfer cylinder grippers is shifted with the transfer cylinder such that the cam maintains concentricity with the cylinder thereby avoiding damage to the grippers as the grippers are actuated by the cam when the cylinder is disconnected.

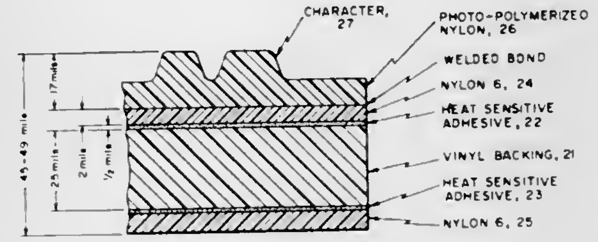
3,703,864
MICR IMPRINTING PHOTO-ETCHED CREDIT CARD

John Ramsey Bradford, Falmouth, Maine, assignor to Magnacheck Corporation, Marblehead, Mass.

Filed Nov. 2, 1970, Ser. No. 86,257

Int. Cl. B41l *47/02;* **G03c** *5/00;* **G03f** *7/00*

U.S. Cl. 101—369 **2 Claims**


CHARACTER, 27
PHOTO-POLYMERIZED NYLON, 26
WELDED BOND
NYLON 6, 24
HEAT SENSITIVE ADHESIVE, 22
VINYL BACKING, 21
HEAT SENSITIVE ADHESIVE, 23
NYLON 6, 25

A personal credit card for use in a hand operated imprinter for placing MICR and OCR encoding on business documents through a suitable carbon comprises a balanced laminated structure of a PVC core having a light insensitive nylon film adhesively bonded on each side. A film of a photo-polymerizable nylon is autogeneously bonded to one of the light insensitive films. The reverse side of the photo-polymerizable film is lightly exposed prior to the autogeneous bonding. The obverse photosensitive side of the film is exposed through a negative containing the requisite visually readable and machine-readable types of characters, and the unexposed background areas are then removed by solvent washing to leave the characters in relief. The prior exposure of the reverse side of the photosensitive film permits "over etching," i.e., allows more tolerance in the etching step and assures that 100 percent contact between the two nylon films remains at the autogeneous bond minimizing penetration of the solvent to the sub film and assuring good support of the relief characters.

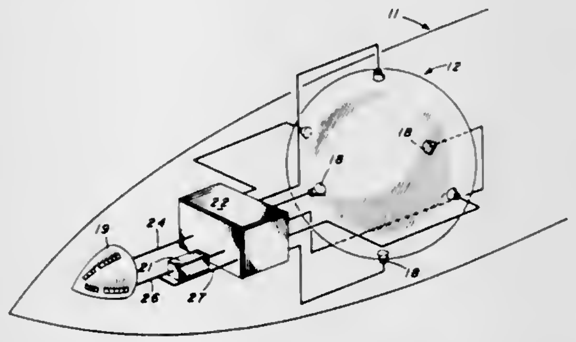
3,703,865
ELECTRONICALLY CONTROLLED AIMED BLAST WARHEAD

Warren L. Gilbertson; Everett T. Shelton, Jr., both of Fredericksburg, and Hobert M. Southall, King George, all of Va., assignors to The United States of America as represented by the Secretary of the Navy

Filed Feb. 28, 1968, Ser. No. 710,706

Int. Cl. F42b *1/00;* **F42d** *1/04*

U.S. Cl. 102—56 **11 Claims**



An aimable warhead comprising a spherical core of high explosive, a buffer material enveloping this sphere, sheet explosive enveloping the buffer and an outer casing for the entire warhead. The buffer material is such that initiation of the outer layer of explosive at a single location does not immediately initiate the core explosive. However, the collision of detonation waves in the sheet explosive produces enough additional pressure at the line of collision to initiate the core at that line. The selection of a plurality of initiation points and of a sequence of initiation enables the explosive force of the core to be directed in a desired direction.

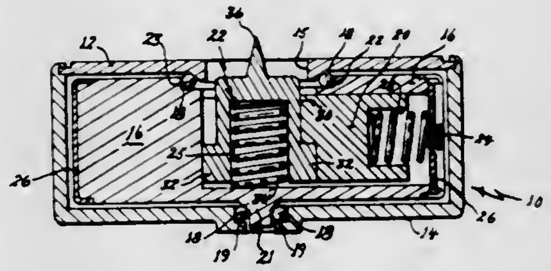
3,703,866
DELAY ARMING MECHANISM

Eugene Semenza, Buffalo, Minn., assignor to The United States of America as represented by the Secretary of the United States Air Force

Filed May 20, 1970, Ser. No. 39,946

Int. Cl. F42c *15/22*

U.S. Cl. 102—70 S **6 Claims**



A delay arming mechanism having an outer housing and an inner housing rotatably mounted within the outer housing. A firing mechanism is also located within the inner housing and a plurality of lockweights prevent the movement of the firing mechanism. Upon spinning of the outer housing, the inner housing initially remains stationary due to its inertia. Eventually due to friction the inner housing also begins to spin. At a predetermined RPM the lockweights within the inner housing move out of engagement with the firing mechanism and allows for its movement into the actuating position. It is the time necessary for the inner housing to reach the speed of the outer housing which constitutes the delay time of this invention.

3,703,867
MINE DETONATOR WITH ELECTRIC IGNITION

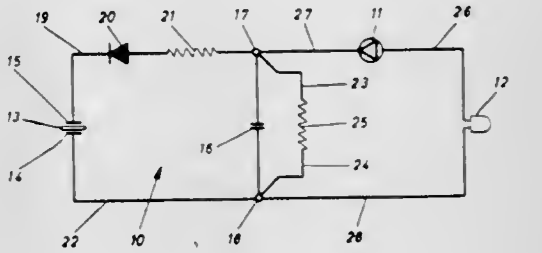
Paul Madlener, Karlsruhe-Durlach, and Otto Pecksen, Herrenalb, both of Germany, assignors to Industrie-Werke Karlsruhe Aktiengesellschaft, Karlsruhe, Germany

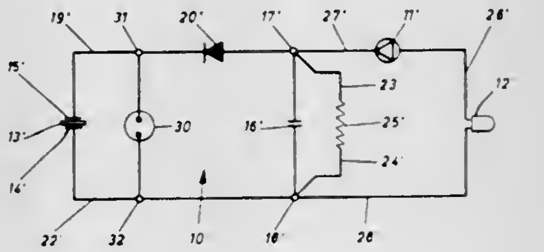
Filed Dec. 24, 1968, Ser. No. 790,504

Claims priority, application Germany, Dec. 27, 1967, P 15 78 488.0

Int. Cl. F42c *11/02, 15/40, 19/06*

U.S. Cl. 102—70.2 R **6 Claims**





A detonator for a land mine used in tank warfare is provided with an ignition circuit in which the source of voltage for ignition of the primer capsule is formed by a piezo-crystal transmitter. The latter when subjected to impact impulse produces voltage impulses which are applied to a summation device for building up and ignition voltage of the required magnitude to cause an ignition of the primer capsule in the mine.

3,703,868
PROTECTIVE SURFACE COVERING HAVING HEAT AND MOISTURE RESISTANT PROPERTIES FOR CASELESS AMMUNITION

Edmund C. Braak, Landing, N.J., assignor to Hercules Incorporated, Wilmington, Del.

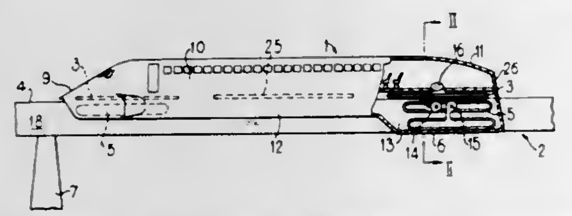
Filed July 7, 1970, Ser. No. 53,009
Int. Cl. F42b *1/00, 5/18, 9/16*
U.S. Cl. 102—103 **5 Claims**

A heat and moisture resistant surface covering for propellant is provided. This surface covering is consumed in the chamber of a gun with the propellant charge being protected by the surface covering. The surface covering is prepared from a polyolefin film base material having a heat resistant and combustible composition bonded to the exterior surface of the base material. The surface covering of this invention has particular utility for use with caseless ammunition.

3,703,869
TRACK GUIDED VEHICLE

Richard Randell, Burwell, England, assignor to Tracked Hovercraft Limited, London, England

Filed July 28, 1970, Ser. No. 58,865
Int. Cl. B61b *13/08*
U.S. Cl. 104—23 FS **10 Claims**

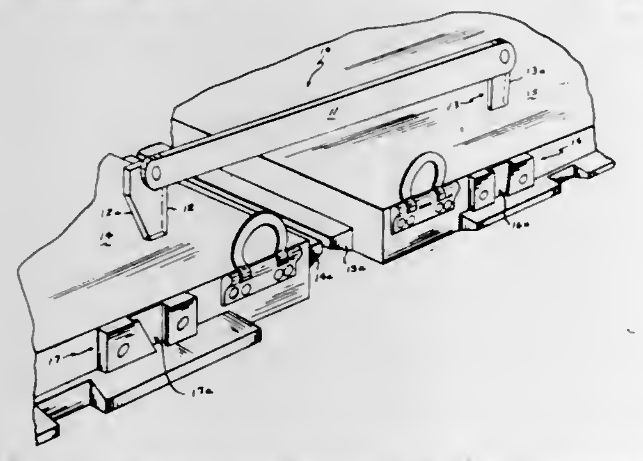


In a track guided gas cushion vehicle two longitudinally spaced pairs of cushion forming pads are provided on sides of the vehicle which embrace a rectangular-section track. The cushions of these pairs of pads co-operate with upper portions of the track sides to counteract lateral and yawing movements of the vehicle, due for example to cross winds. A further pair of cushion forming pads is provided on the vehicle sides, below the other pairs of pads, so that their cushions co-operate with lower portions of the track sides, and towards the vehicle rear, to counteract rolling moments exerted on the vehicle. Cushion perform pads to support the vehicle perform substantially no roll stabilizing function so as to be minimally perturbed by forces exerting yawing or rolling moments on the vehicle. Preferably the vehicle is propelled by a single sided linear induction motor.

3,703,870
COUPLER-CARGO PALLET/CONTAINER

Roger H. Walton, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force

Filed March 10, 1971, Ser. No. 122,706
Int. Cl. B60p *7/00;* **B61g** *5/00*
U.S. Cl. 105—366 R **3 Claims**



A cargo-pallet coupler mechanism for interconnecting and thereby joining a series of cargo-carrying pallets or containers in train, and consisting of a pair of elongated coupler-rods each having a depending key element on opposite sides thereof for respective engagement in a corresponding pair of block elements affixed on opposite sides of each pallet or container.

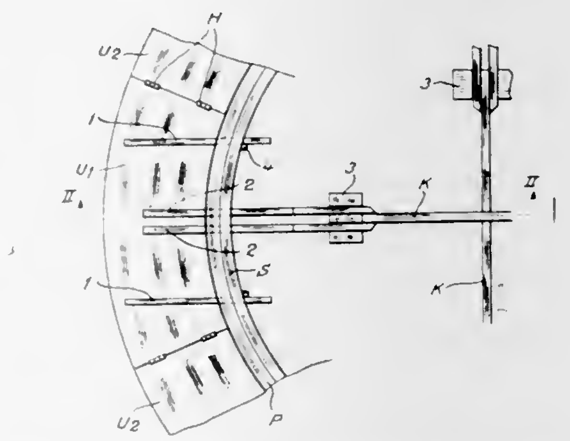
3,703,871
TABLE EXTENSION

Henry Filso Bertelsen, Industrivey 1, 6933 Kibaek, Denmark

Filed Jan. 18, 1971, Ser. No. 107,237

Claims priority, application Denmark, Jan. 19, 1970, 207/70

Int. Cl. A47b *1/05*
U.S. Cl. 108—66 **4 Claims**

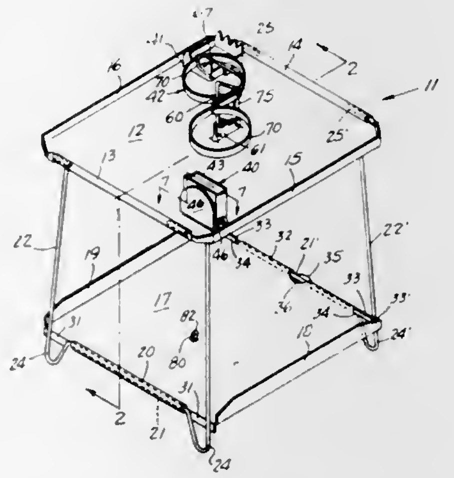


The leaf extensions are mounted on a set of short side extension bars and a set of long middle extension bars. The middle extension bars, when in the extended state, are restrained against pivoting by retaining slabs secured to the cross-frame. In order to permit the middle extension bars of diametrically opposed sets to slide over each other, the sets are provided with different profiles so as to slide on the retaining slabs into different planes.

3,703,872
COLLAPSIBLE PORTABLE UTILITY TRAY STAND

Domenick P. Barrevecchia, 12 Fernando Drive, Westerly, R.I.

Filed Feb. 26, 1971, Ser. No. 119,212
Int. Cl. A47b *3/08*
U.S. Cl. 108—111 **8 Claims**

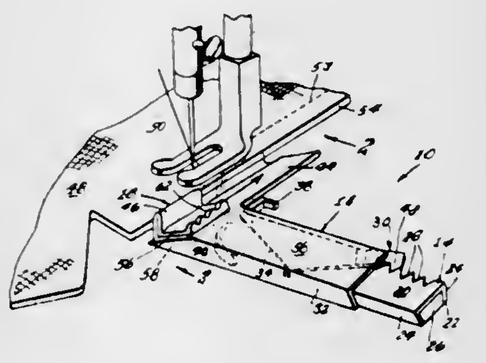


A folding table consisting of a top board and a bottom shelf, with respective supporting leg assemblies hinged to opposite edges of the top board. One leg assembly has a cross bar to which one transverse edge of the bottom shelf is hinged, and the shelf has a resilient channel element on its other transverse edge lockingly receiving a cross bar on the other leg assembly. The channel element can be disengaged from its locking position and the shelf can be swung into an inverted overlying position covering the top board, with the leg assemblies swung to overlapping positions, closely received between the top board and the shelf. The top board is provided with various accessories foldable to positions close to the top board and covered by the shelf when the table is in its folded condition.

3,703,873
SELF-ADJUSTING SEWING MACHINE GAGE

Arthur Kalish, 64-10 Dieterle Crescent, Rego Park, N.Y.

Filed Sept. 26, 1966, Ser. No. 582,009
Int. Cl. D05b *35/10*
U.S. Cl. 112—153 **2 Claims**

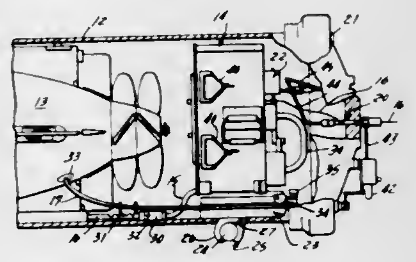


A gauge for positioning fabrics beneath a sewing machine needle and thus controlling the distance between a stitch and and edge of the fabric. Adjustment means for preventing the gage from obstructing the material feed by a possible protruding portion of the material are provided when an edge is configurated with acute angles. Automatic means for resetting the gage to a normal position, once the protruding obstruction of material has passed the gage is provided.

3,703,874
FLEXIBLE HOSE WIRE PAYOUT SYSTEM

Thomas H. Lemieux, N. Dartmouth, Mass., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 15, 1970, Ser. No. 55,122
Int. Cl. F42b *19/01, 19/06, 19/10*
U.S. Cl. 114—21 R **8 Claims**

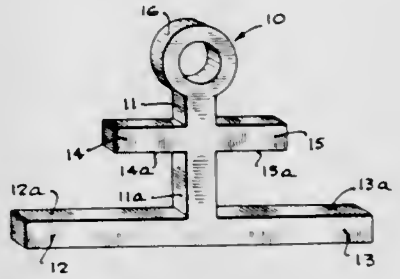


A flexible hose wire payout system is provided to protect guidance wires during the launch and guidance phases of wire-guided torpedoes. The entire flexible hose system is mounted in the torpedo tube so that when the torpedo is launched the hose is deployed and breaks away when it is entirely dispensed. After breaking away, the free end of the hose sinks to and remains at a position below the submarine, allowing the guidance wire thereafter to be dispensed through the hose and permitting considerably increased submarine maneuvering.

3,703,875
BOAT MOORING DEVICE

Robert N. Gunvalson, P.O. Box 78301, Lake Havasu City, Ariz.

Filed July 23, 1971, Ser. No. 165,627
Int. Cl. B63b *21/00*
U.S. Cl. 114—230 **6 Claims**

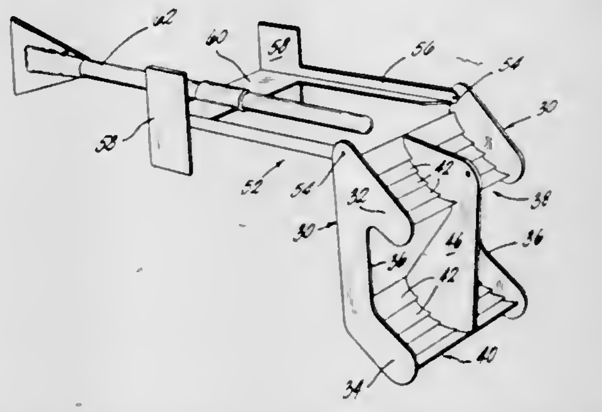


A mooring or anchoring device for boats which is designed to be detachably mounted on a boat pier whose walkway is formed of spaced planks comprising a body section having a ring to which a line from a boat can be tied and spaced laterally extending inner arm member and outer arm members which can be inserted between the spaced plaNks of the pier walkway and then rotated 90° till the arms extend transversely of the planks to prevent the device being accidentally disengaged from the pier.

3,703,876
TOWED UNDERWATER APPARATUS

Finn C. Michelsen, 1902 Independence Boulevard, Ann Arbor, Mich.

Filed Nov. 9, 1970, Ser. No. 87,981
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 B **12 Claims**



Apparatus adapted to be towed underwater, or located in a moving water current, wherein a desired depth may be maintained consisting of a vertically oriented support upon which at least two vanes are horizontally disposed. The vanes are provided with foils or curved plates for producing a negative lift, and are vertically related with respect to each other. For large lift applications the vanes are formed by a plurality of slats between which the water may flow to prevent flow separation. The vane supports are preferably in the form of planar plates which orient the direction of movement of the apparatus and provide longitudinal stability, and towing bridle means are associated with the apparatus, preferably including a planar plate mounted upon the vane slats.

3,703,877
WATER SCOOTER

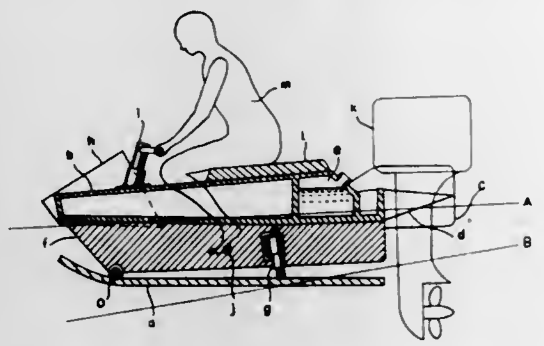
Akira Ueda, Ostermalmsvagen 31 D, 612 02 Finspong, Sweden

Filed June 19, 1970, Ser. No. 47,690

Claims priority, application Japan, Oct. 17, 1969, 44/98300

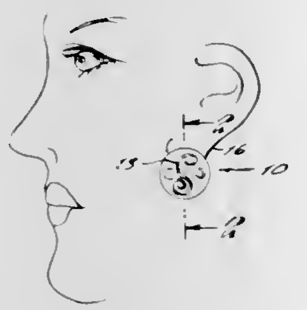
Int. Cl. B63b *35/00*
U.S. Cl. 115—70 **3 Claims**

A water craft or scooter having an elongated, watertight and buoyant body or hull provided with a single ski or runner underneath it and pivotally attached to it and also connected to it by shock-absorbing means. The body or hull is provided in its rear area with laterally extending wings, each of which carries at its outer end, a buoyant float. The wings and their attached



floats are easily detachable from the body or hull to thereby facilitate the transport and storage of the craft. The body or hull may be composed of fiber glass and it may contain a built-in fuel storage tank.

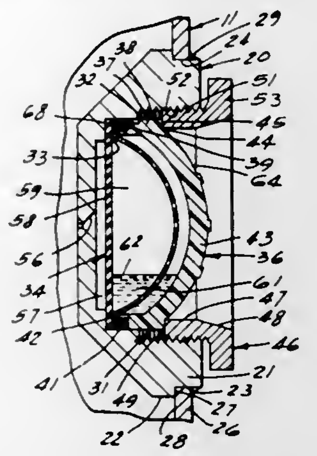
3,703,878
POSTURE EARRINGS
Peter Badovinac, 4069 Dille Avenue, Cleveland, Ohio
Filed July 26, 1971, Ser. No. 165,507
Int. Cl. G08b *3/00*
U.S. Cl. 116—67 **2 Claims**



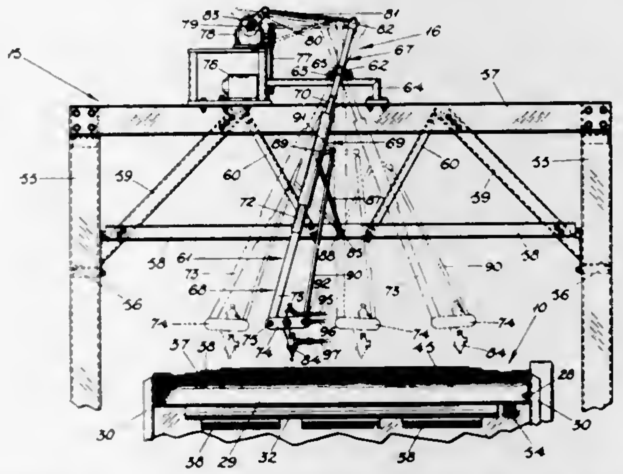
A pair of decorative earrings for being worn on a ladies ears, one of the earrings including an indicator to notify the wearer when her head is properly erect for a good posture, this earing including a horizontally extending chamber there-within that extends along a forward rearward direction, the chamber containing a small ball that is free to roll between opposite ends of the chamber and which when the head is properly erect for good posture rests at the rear end of the chamber; and when the posture becomes careless by inclining the head forwardly causes the small ball to roll toward a forward end of the chamber thus giving a sharp clicking sound so to warn the wearer to hold her head erect, the other earring not incorporating the indicator.

3,703,879
PRESSURE INDICATOR
Charles K. Huthsing, Jr., deceased, late of Old School Road, Libertyville, Ill. (N. Evelyn Huthsing, executrix)
Continuation of Ser. No. 828,468, May 28, 1969. This application April 6, 1971, Ser. No. 131,821
Int. Cl. G01l *19/12*
U.S. Cl. 116—70 **14 Claims**

A device for indicating pressure within a pressure vessel comprises a housing having a depression forming interior sidewalls and a bottom wall, window pane means closing an open end of the depression, an elastomeric diaphragm fitted within the housing depression and sealed between the window pane means and the bottom wall to define with the window pane a sealed chamber containing air to form air spring means urging the diaphragm away from the window. Passage-way means direct a pressure source to be measured to a side of the diaphragm opposite the air spring. Upon a sufficient increase in pressure of the source, the elastomeric diaphragm flexes toward the window pane to operate indicating means in the sealed chamber to move the indicating means to a position visible through the window pane, thereby indicating an increase in pressure.



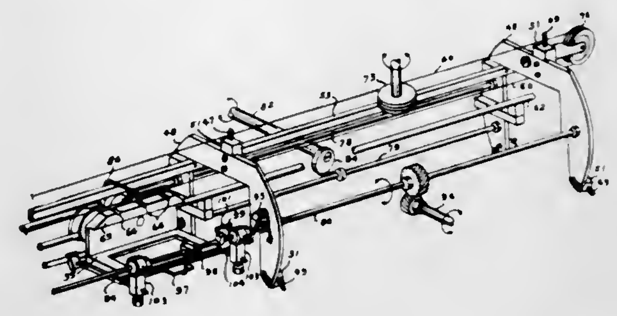
3,703,880
SPRAY COATING APPARATUS
David M. Wampler, Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio
Filed May 6, 1970, Ser. No. 35,030
Int. Cl. B05c *5/00*
U.S. Cl. 118—2 **7 Claims**



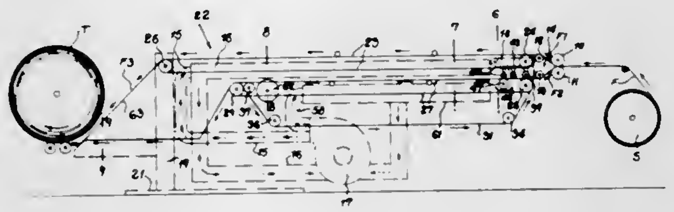
Apparatus for spraying a uniform layer of parting material on the surface of glass windshield blanks prior to the bending thereof in laminated pairs. A composite spray arm oscillates vertically about a pivot point above a continuous conveyor upon which the blanks are advanced while horizontally disposed, and has a central telescoping section adapted to render the path of the lower end thereof substantially linear. A spray nozzle fixed to a member pivotally mounted on the lower end of the spray arm is adapted to pivot in conjunction with the oscillation of the arm so as to maintain the axis of the spray nozzle substantially vertical.

3,703,881
APPARATUS FOR ULTRA-HIGH VACUUM IN SITU THIN FILM STUDIES
Franz X. Ruf, Kettering; Wayne R. Chase, Dayton, and Raymond A. Prell, Fairborn, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force
Filed May 13, 1971, Ser. No. 143,080
Int. Cl. C23c *13/08*
U.S. Cl. 118—9 **4 Claims**

A thin film fabricating and test apparatus has a substrate holder cart positioned on a pair of tracks within a tubular vacuum system. Feed through drive units operate to move the cart to positions adjacent deposition units and test units within the vacuum system. A second drive unit positions the cart and moves masks and test contacts to a position adjacent substrate. A third drive unit positions deposition control shutters adjacent the substrate.

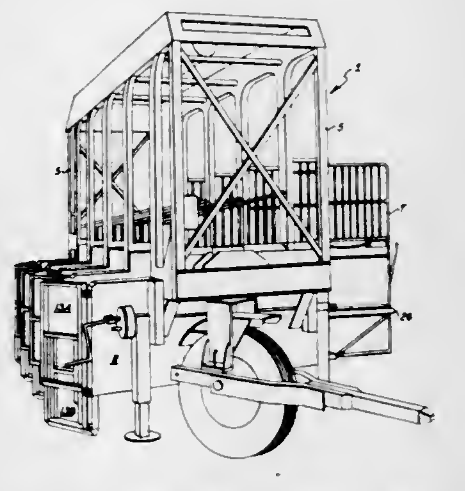


3,703,882
FABRIC HANDLING APPARATUS
Peter Haft, Brooklyn, N.Y., assignor to Knitting Specialty Machinery Corp., Glendale, N.Y.
Filed Dec. 16, 1970, Ser. No. 98,776
Int. Cl. B05c *11/00;* **D03d** *47/50*
U.S. Cl. 118—32 **11 Claims**



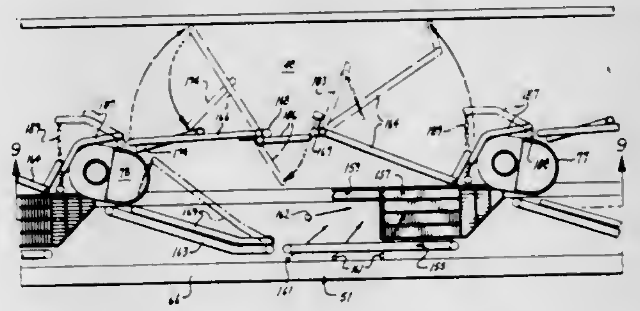
A machine for converting a length of tubular fabric into an unfolded web of fabric including gumming, drying, slitting and opening the tubular fabric where the heat used in drying a gummed portion of the fabric is applied simultaneously along both the inside and outside surfaces of the gummed portion without the use of an internal spreader.

3,703,883
RETRACTABLE AUTOMATIC BREAKING DOOR FOR STARTING GATES
Richard M. Mills, Inglewood, Calif., assignor to Puett Electrical Starting Gate, Inc., Tuckahoe, N.Y.
Filed May 20, 1971, Ser. No. 145,247
Int. Cl. A63k *3/00, 3/02*
U.S. Cl. 119—15.5 **7 Claims**



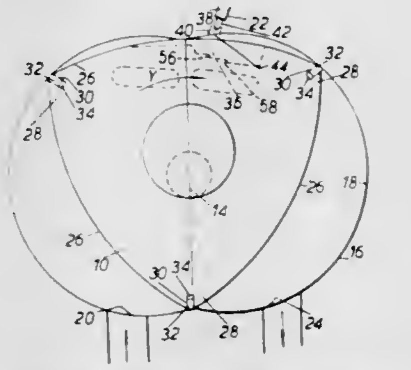
A race track starting gate has a plurality of stalls each with front doors that simultaneously swing open during starting and rear breaking doors with lower portions that can be raised together. The rear doors of each stall are pivoted to the starting gate frame for opening to admit a horse and each rear door is provided with fenders to guide the horses and enclose same when the doors are closed. A common lifting device is connected to each lower door portions for lifting those portions off the ground at the same time.

3,703,884
AUTOMATED DAIRY BARN MILK STALL
Richard E. Maddalena, 2494 "I" Street, and Edward J. Maddalena, 915 "I" Street, both of Petaluma, Calif.
Filed April 21, 1970, Ser. No. 30,470
Int. Cl. A01j *1/00*
U.S. Cl. 119—27 **4 Claims**



A dairy barn for automatically processing cows for milking. Individual cows are moved from a herd in a holding area serially into a wash stall, a prep stall; a runway, one of a plurality of milk stalls, and an exit passageway. The cows are moved from station-to-station automatically responsive to pre-set control functions and cow movement. Memory controls are provided to insure that every cow directed to a milk stall has gone through a complete wash and prep cycle. The memory controls are also designed to keep the milk stalls loaded with "unmilked" cows. For example, where cows are let out of two milk stalls in the same milking line, the wash and prep stalls will automatically process two additional cows which are in turn released to these milk stalls. The operation is automatic in that the only action required by the operator is in releasing the milked cows from the milk stalls. When each cow is milked and leaves its milk stall, the control system automatically advances a washed and preped cow into this stall, advances a washed cow into the prep stall, and advances a cow from the holding area into the wash stall. Each milk stall is adapted to position the cow in an optimum relationship for milking with respect to an operator's walkway, and pusher gates are provided to operate when the milk stall is opened for urging the cow to leave the milk stall by itself.

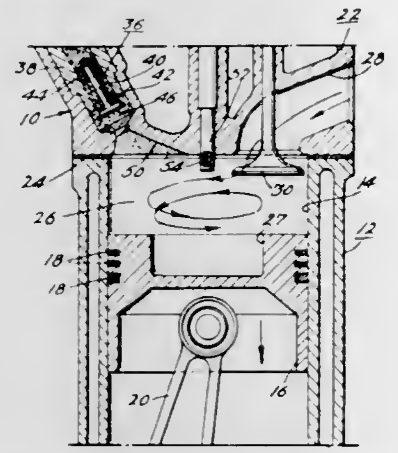
3,703,885
ROTARY PISTON INTERNAL COMBUSTION ENGINES
Fritz Feller, "Shaldon" 231 Manor Way, Crewe, England
Continuation-in-part of Ser. No. 807,263, March 14, 1969, abandoned. This application Nov. 6, 1970, Ser. No. 87,421
Claims priority, application Great Britain, March 29, 1968, 15,150/68
Int. Cl. F02b *55/14*
U.S. Cl. 123—8.11 **8 Claims**



A rotary piston engine of the Wankel type in which the combustion chambers are constituted by recesses positioned in the leading half of each side of the piston and in which injection means is arranged to direct fuel into the recesses. The recesses are each provided with means so arranged that a rotational movement is imparted to the working fluid in a plane parallel to the base of the recess.

3,703,886
PUMPLESS STRATIFIED CHARGE GAS ENGINE

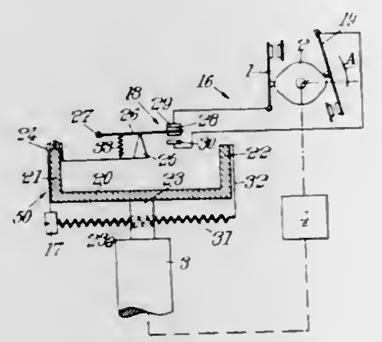
Julius E. Witzky, 121 Riviera Drive, San Antonio, Tex.
Filed Nov. 9, 1970, Ser. No. 87,753
Int. Cl. F02b *9/06;* **F02d** *39/04*
U.S. Cl. 123—32 ST **3 Claims**



A pumpless four cycle internal combustion engine for lighter-than-air gaseous fuels such as natural gas. The gas at a controlled low pressure is admitted to a gas chamber adjoining the engine combustion chamber by a check valve during the intake stroke while unthrottled air enters the combustion chamber and is given a swirling motion by suitable means at the air intake valve. During the compression stroke, the swirling air draws the gaseous fuel from the gas chamber and, due to the lower specific weight of the fuel, swirls the fuel spirally toward a centrally located glow plug. At the end of the compression stroke, the fuel charge is stratified around the glow plug in a concentric pattern whereupon ignition occurs.

3,703,887
IGNITION DEVICES FOR INTERNAL COMBUSTION ENGINES

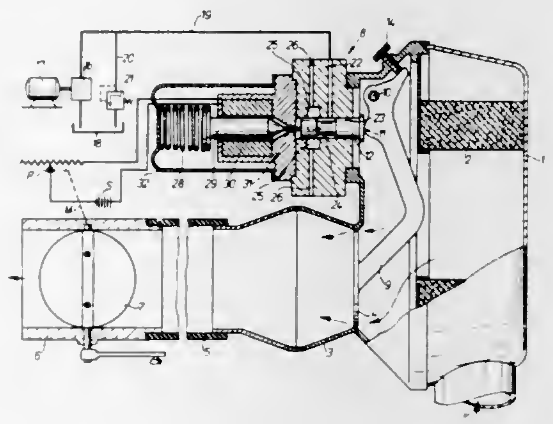
Jean Panhard, Paris, France, assignor to Societe de Constructions Mecaniques Panhard & Levassor, Paris, France
Filed Dec. 10, 1969, Ser. No. 883,945
Claims priority, application France, Dec. 12, 1968, 68177919
Int. Cl. F02p *5/04, 5/08*
U.S. Cl. 123—117 R **1 Claim**

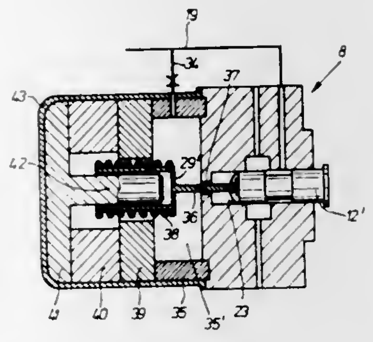


The ignition device, especially for rotary piston engines, includes means sensitive only to the rotary speed of the engine and modifying means such as a centripetal mechanism or an electromechanical mechanism. This modifying means ensures, on one hand, a substantially constant value of the ignition advance on starting and on slow-running speed of the engine, up to a speed N_L r.p.m., on the other hand a rapid reduction in the advance for rotary speeds of the engine comprised between N_L and the speed N_S, N_S being greater or equal to N_L and, finally on the other hand, an increase of the advance when the rotary speed exceeds N_S.

3,703,888
DEVICE FOR THE FUEL QUANTITY CONTROL IN RESPONSE TO OPERATIONAL VARIABLES OF AN INTERNAL COMBUSTION ENGINE

Konrad Eckert, Stuttgart-Bad Cannstatt, and Heinrich Knapp, Leonberg-Silberberg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Nov. 24, 1970, Ser. No. 92,345
Claims priority, application Germany, Dec. 1, 1969, P 19 60 146.8
Int. Cl. F02m *69/00, 63/02*
U.S. Cl. 123—119 R **6 Claims**



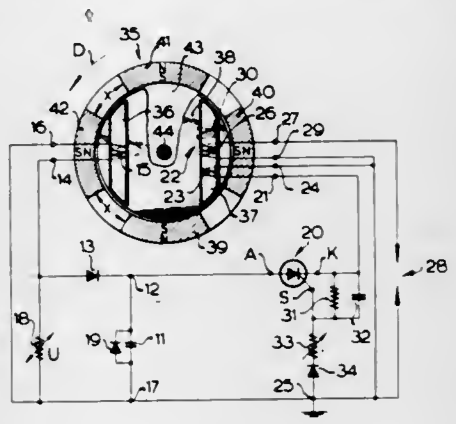


In an internal combustion engine, a sensor, disposed in the suction tube and deflected as a function of the flow rate of air, operates a fuel quantity control member against a force which is derived from the magnetic flux of an electromagnet, the energizing current intensity of which changes as a function of operational variables (such as load, rpm or temperature) of the engine.

3,703,889
IGNITION ARRANGEMENT FOR INTERNAL COMBUSTION ENGINES

Bernd Bodig, Leinfelden; Gerhard Sohner, Geradstetten, and Gert Strelow, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Oct. 22, 1970, Ser. No. 83,039
Claims priority, application Germany, Oct. 31, 1969, P 19 54 874.4
Int. Cl. F02p *9/00, 1/00, 77/00*
U.S. Cl. 123—145 E **36 Claims**

Four rotating magnets, driven by the engine, induce in two or more windings a charging pulse, a discharging pulse, and a control pulse, the latter pulse in certain embodiments being identical with the charging pulse. The control pulse, the value of which is engine rpm-dependent, causes a normally open circuit shunting the ignition capacitor to close when the engine rpm exceeds the permissible maximum, thereby discharging the ignition capacitor and preventing it from furnishing electrical energy to the spark coil. In this way, the engine rpm is limited to safe values.

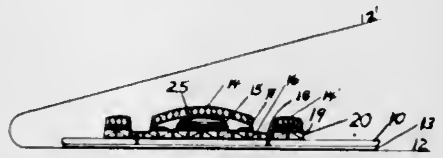


ERRATUM

For Class 126—85 B see:
Patent No. 3,703,895

3,703,890
SKIN PATCH TEST DEVICE

Milton A. Saunders, Jr., 440 W. Farmington Road, Virginia Beach, Va.
Filed Aug. 10, 1970, Ser. No. 62,480
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 W **12 Claims**

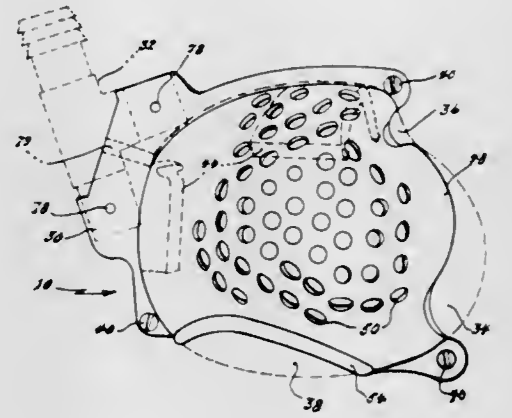


A plurality of individual applicators for performing skin patch tests are arrayed in spaced relation on an adhesively coated sheet of material for attachment to a patient's skin. A plurality of rupturable capsules or ampules are mounted with the adhesively coated sheet, each containing a different prepared test material or contactant, e.g. solid, particulate, etc., for contact with the subjects skin to enable a determination of whether the preselected contactant substances produce any local reactions with the patient's skin. The capsules or ampules are effectively isolated from each other to prevent interaction between the various test materials contained in each of the capsules or ampules.

3,703,891
MULTI-PURPOSE HELMET ASSEMBLY ESPECIALLY FOR USE WITH A CATHETER

William H. Talley, Alamogordo, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force
Filed Aug. 28, 1970, Ser. No. 67,827
Int. Cl. A61f *5/00*
U.S. Cl. 128—2 R **5 Claims**

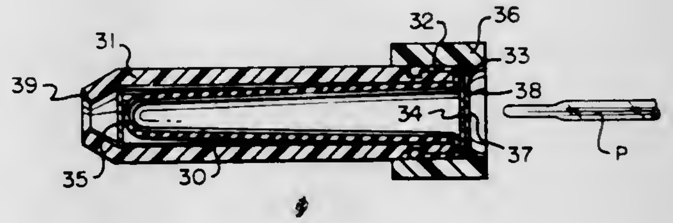
A helmet assembly having a helmet, a storage well and a connector assembly. The helmet has a pair of eye slots therein and a face and neck opening. The connector assembly is utilized for introducing the proper medical equipment, or the like, through the helmet to the wearer. By the proper sizing



and mounting of the helmet assembly, the wearer is unable to disturb any of this equipment, even in the conscious or active state.

3,703,892
DISPOSABLE, RETRACTABLE THERMOMETER JACKET

Edward F. Meyers, 790 Boylston Street, Boston, Mass.
Filed Dec. 9, 1970, Ser. No. 96,605
Int. Cl. A61b *5/00*
U.S. Cl. 128—2 H **8 Claims**

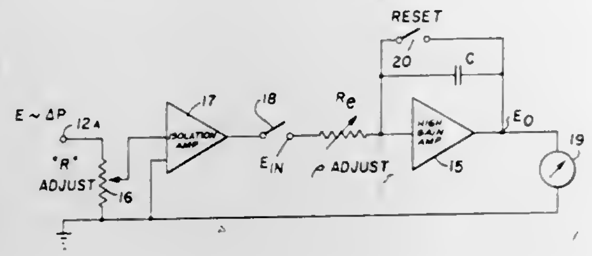


A prophylactic device comprising disposable, flexible, stretchable sterile jacket or sheath housed in a small, membrane sealed, tubular plastic or paper cartridge is disclosed herein. The sterile jacket may be very quickly stretched over and removed from a fever thermometer, thereby completely eliminating the need to otherwise conventionally sterilize thermometers or similar probes prior to each use. After its use, the jacket retracts automatically and sanitarily into the cartridge for easy disposal. The new prophylactic device simplifies and greatly reduces the cost of using all types of thermometer probes which require sterilization prior to each use. Large supplies of the cartridges may be packaged and stored for convenience in dispensers. Individual cartridges are small enough to be carried in large numbers in clothing pockets.

3,703,893
METHOD AND APPARATUS FOR DETERMINING WORK OF BREATHING

Edward V. Hardway, Jr., Houston, Tex., assignor to Spearhead, Inc., Houston, Tex.
Filed Oct. 23, 1970, Ser. No. 83,420
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.08 **6 Claims**

A method and apparatus is disclosed for determining work of breathing by using a dynamic flow measuring means, such as venturi tube to obtain an electrical signal proportional to flow squared of air or other gas breathed. This signal is scaled in proportion to a previously obtained value of respiratory resistance and then integrated over one or more respiratory cycles to obtain a signal proportional to the work of breathing.

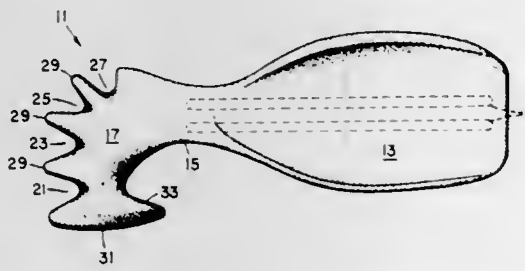


The integrating means time constant is adjusted in accordance with the separately determined air or gas density.

3,703,894
RIGID FOAM POLYURETHANE HAND SPLINT

Dwight V. Galloway, West Billings, Mont.; Gordon E. King, Moraga, Calif.; Charles C. Asbelle, Oakland, Calif., and Michael F. Arrigo, Berkeley, Calif., assignors to The United States of America as represented by the Secretary of the Navy

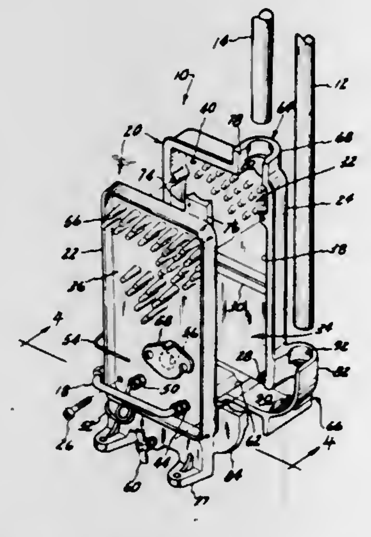
Filed Feb. 16, 1971, Ser. No. 115,458
Int. Cl. A61f *5/10*
U.S. Cl. 128—77 **5 Claims**



A light foam polyurethane hand burn splint designed as a single unit consisting of a broad, concave arm-piece, a thicker-but-narrower wrist section, and a pistol grip hand portion to support the hand in a position to prevent scar contractures from causing postburn deformities.

3,703,895
HEATING APPARATUS

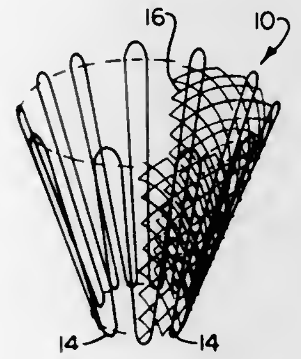
Edwin E. Wiberg, 17594 Westbrook, Detroit, Mich.
Filed Dec. 3, 1970, Ser. No. 94,920
Int. Cl. F24c *3/00*
U.S. Cl. 126—85 B **3 Claims**



A heating apparatus having a housing enclosing a heat chamber between a pair of separable heat radiating walls and including an inlet boss adapted to be connected to an inlet pipe for conducting fresh air into the heat chamber, and an outlet boss adapted to be connected to an outlet pipe for conducting exhaust gas from the heat chamber. Each boss comprises separable flanges, one of which is integrally formed on one of the heat transfer walls, while the other flange is formed on the other heat transfer wall. The flanges have opposing complementary surfaces which engage each other when the heat transfer walls are joined to form the connections in which the inlet and outlet pipes are seated.

3,703,896
INTRAUTERINE CONTRACEPTIVE DEVICE

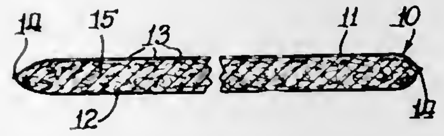
Elie S. Nuwayser, Peabody, Mass., assignor to Abcor, Inc., Cambridge, Mass.
Filed Dec. 29, 1970, Ser. No. 102,363
Int. Cl. A61f *5/46*
U.S. Cl. 128—130 **22 Claims**



A three-dimensional intrauterine contraceptive device which conforms in an infinite manner to the internal geometric shape of the uterine cavity. The device is comprised of a plurality of resilient interconnected rib-like members which define a generally cylindrical-type shape. The device is inserted into the uterine cavity in a compressed condition. Upon release from a holder the device expands outwardly engaging the walls of the uterine cavity to provide an effective contraceptive device.

3,703,897
HYDROPHOBIC NON-ADHERENT WOUND DRESSING

Robert J. Mack, and John L. Fischer, both of Arlington Heights, Ill., assignors to The Kendall Company, Walpole, Mass.
Filed Oct. 9, 1969, Ser. No. 864,989
Int. Cl. A61l *15/01*
U.S. Cl. 128—156 **13 Claims**



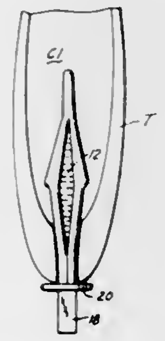
A resilient, substantially flat, non-adherent flexible wound dressing which remains flexible when dry, of hydrophobic material capable of retaining substantial quantities of fluid wound exudate. One or both major surfaces may be non-adherent wound-contacting surfaces which may include fenestrated film or interrupted exposed portions of flattened sheetlike fused fibers having a filmlike appearance, or both. The interior of hydrophobic fibers is arranged to retain fluid wound exudate by capillary action. If superimposed fenestrated film is used, it may be united to the hydrophobic fibers either at or inside the dressing edges, or both, preferably by melt sealing.

Dressings may be prepared by pressing (with substantially no relative movement) the hydrophobic fibrous material, preferably a carded or air laid batt together with any fenestrated film between closely adjacent parallel uni-directionally moving surfaces of a foam and a stainless steel belt which is heated and then cooled. In the absence of a covering fenestrated film, the surface fibers of the batt, pressed against the heated belt, are softened, flattened, fused and subsequently congealed in contact with the polished belt, thereby forming sheetlike interrupted surface areas of filmlike appearance. When a fenestrated film is added to the dressing, it passes in contact with the stainless belt and may be melt sealed in passage to the fibrous batt with sheetlike interrupted areas of fused fibers being formed, or not formed depending upon the temperature the fibers reach, through the holes in the fenestrated film.

A melt edge version of the dressing with soft edges may be made with a cooled perimeter clamp adjacent which a hot perimeter knife cuts and seals the dressing edge.

3,703,898
TEAT DILATOR

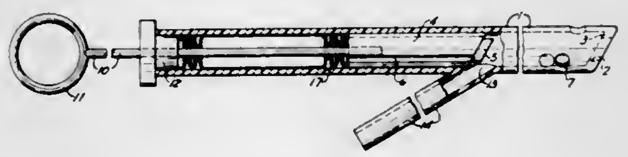
Eli A. Zackheim, Norwich, Conn., assignor to Jules Silver, Norwich, Conn.
Filed July 27, 1970, Ser. No. 58,569
Int. Cl. A61m *35/00*
U.S. Cl. 128—261 **5 Claims**



A teat dilator for insertion into the canal opening in a cow's teat and characterized by a multi-sided frame of more than two members joined together; the frame providing a cavity which may be used for carrying a medicament into the canal and the members forming the frame being made of resilient plastic material so that the dilator will deform on insertion into the opening but expand again after passing through the opening to support and separate the canal walls, the dilator being adaptable to fit into and be useful with canals of varying length.

3,703,899
SURGICAL DRAINAGE INSTRUMENT

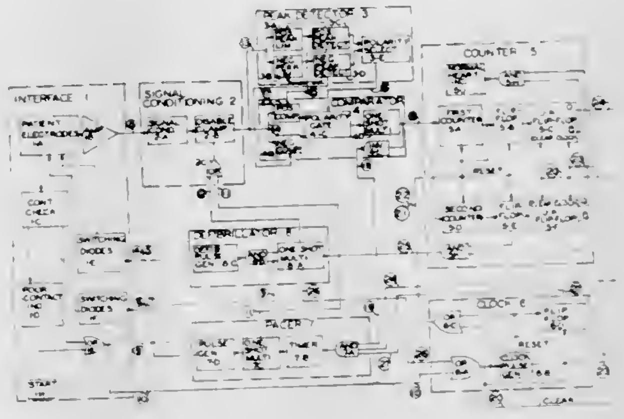
Teodora A. Calinog, 320 E. North Avenue, Pittsburgh, Pa.
Filed Jan. 28, 1971, Ser. No. 110,469
Int. Cl. A61b *17/34, 27/00*
U.S. Cl. 128—347 **4 Claims**



A trocar is slidably mounted in a main tube and normally is disposed at its front end. Connected to the rear end of the trocar is a rod that extends back through the tube and out of its rear end. A tubular bellows encircles the rod and has a front end sealed to the trocar, while the rear end of the bellows is sealingly connected to the rear end of the tube. After the tube is inserted in an incision the trocar is pulled back into a position near the rear end of the tube. Directly in front of this rear portion the tube is provided with a lateral outlet opening and a discharge tube so that drainage can occur back through the two tubes.

3,703,900
CARDIAC RESUSCITATOR

Melvin A. Holznagel, Sherwood, Oreg., assignor to Cardiac Resuscitator Corporation, Portland, Oreg.
Filed Dec. 2, 1969, Ser. No. 881,470
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 P **22 Claims**



A resuscitator apparatus includes means for detecting and counting the heart beat of a suspected heart attack victim, and means for substantially immediately applying a pacing pulse or a defibrillating pulse, as required. Thus, if the patient's pulse rate is extremely low or nonexistent, a pacing pulse is automatically applied for stimulating a heart beat in time with such pulse. However, if the electrocardiac signal from the patient indicates an extremely high rate indicative of ventricular fibrillation, a defibrillating pulse is applied to the patient. If a normal beat occurs, appropriate indication is given, and no corrective action is taken. The apparatus attaches to the patient for administering the correct electrical stimulation to the patient as soon as possible after the occurrence of the suspected attack.

3,703,901
TOBACCO COMPOSITION

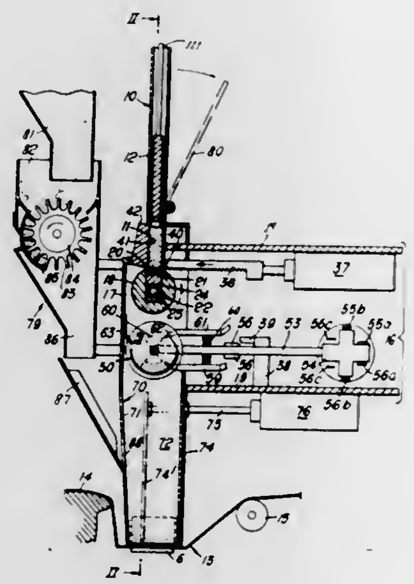
Vello Norman, Chapel Hill; Thomas B. Williams, Durham; Andrew G. Kallianos, Durham, and James D. Mold, Durham, all of N.C., assignors to Liggett & Myers Incorporated, New York, N.Y.
Continuation-in-part of Ser. No. 749,324, Aug. 1, 1968, Pat. No. 3,572,348. This application March 11, 1971, Ser. No. 123,422
Int. Cl. A24b *15/02*
U.S. Cl. 131—17 R **12 Claims**

A smoking preparation comprising tobacco and a zeolite material which effects a decrease in the amount of polycyclic aromatic compounds produced from the pyrolytic reactions of tobacco, the zeolite material being of the Y-type structure, at least partially exchanged with zinc ions and containing platinum or silver.

3,703,902
APPARATUS FOR MAKING CIGAR BUNCHES

John Adolph Sargrove, Weybridge, Surrey, England, assignor to The Imperial Tobacco Company Limited
Filed Feb. 17, 1969, Ser. No. 799,790
Claims priority, application Great Britain, March 6, 1968, 10,772/68
Int. Cl. A24c *01/02;* **G01g** *13/04*
U.S. Cl. 131—22 A **6 Claims**

An apparatus for making cigar bunches including means for preparing charges of filler tobacco which fall short of the target weight, means for determining how short the charges are, and means for adding a number of topping up units of tobacco



of predetermined size according to the amount by which the charge is short of the target weight.

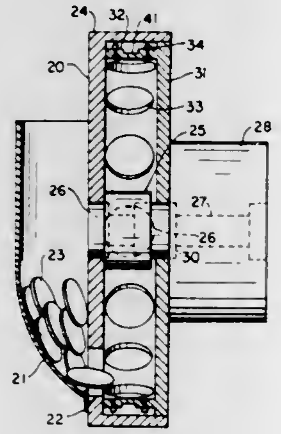
3,703,903
ROTARY DRUM COIN STACKING AND DISPENSING DEVICE

Donald E. Landis; Mohanjit S. Sidhu, and Richard E. Cone, all of Cambridge, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Sept. 7, 1971, Ser. No. 178,320

Int. Cl. G07d *9/06*

U.S. Cl. 133—1 **10 Claims**



A coin dispensing mechanism comprising a plurality of coin dispensing stations, each station including a rotary drum having a circumferential flanged edge containing a plurality of holes mounted within a stationary wheel having a circumferential overhanging portion which forms a circumferential slot with the flanged edge of the rotary drum. The drum will rotate through a reservoir of coins during which coins will drop through the holes and into the circumferential slot. The coins will then be engaged by pins mounted on the outside of the flanged edge of the drum and transported through the circumferential slot until they come in contact with a coin chute located at the top of the drum into which they are deposited. When the coin chute is full, the drum will stop.

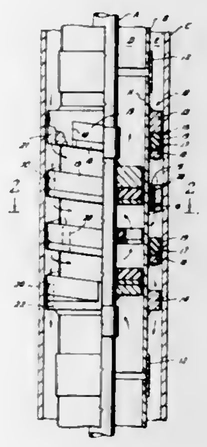
3,703,904
SAFETY PACK-OFF FOR WELLS

John McClinton, 8603 Glenaire, Houston, Tex.

Filed Sept. 7, 1971, Ser. No. 178,068

Int. Cl. F16k *31/00*

U.S. Cl. 137—504 **4 Claims**



A safety pack-off operable to seal off the annular spaces between concentric pipe strings in oil and gas wells automatically in response to excessive fluid flows upwardly through the annular spaces.

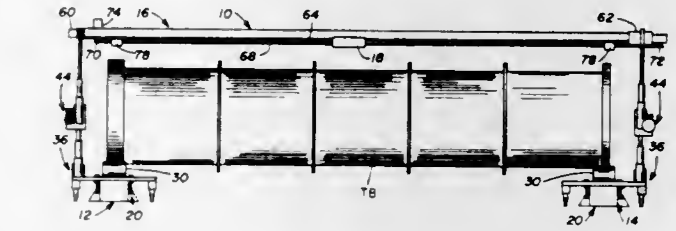
3,703,905
HEAT EXCHANGER CLEANING SYSTEM

Charles O. Ice, Jr., Long Beach, Calif., assignor to Hydro-Vel Services, Inc., Monahans, Tex.

Filed June 26, 1970, Ser. No. 50,067

Int. Cl. B08b *3/02, 9/02*

U.S. Cl. 134—144 **21 Claims**



A heat exchanger cleaning system includes a pair of dollies each comprising powered rollers for receiving and supporting a tube bundle and a boom pivoting assembly. A boom is supported on the pivoting assemblies for rotation about a tube bundle, and in turn supports a cleaning head that discharges cleaning material. In the use of the cleaning system, the distance between the dollies, the horizontal positions of the pivoting assemblies, the vertical position of the axis of rotation of the boom, and the distance from the axis to the boom are adjusted in accordance with a particular tube bundle configuration. Then, a tube bundle is mounted on rollers, the boom is rotated to successive positions arcuately of the tube bundle, and the cleaning head is moved back and forth along the boom. During its movement from position to position, the boom is pivoted about an axis extending longitudinally through it to optimize the angle at which cleaning material is discharged from the cleaning head.

ERRATUM

For Class 137—504 see:
Patent No. 3,703,904

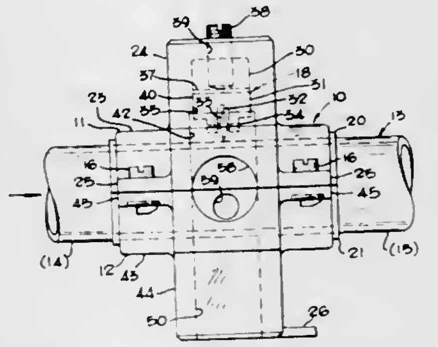
3,703,906
PIPE FITTING

Edward F. Tickett, El Paso, Tex., assignor to Alex B. Reynolds, St. Louis, Mo., a part interest

Continuation-in-part of Ser. No. 864,739, Oct. 8, 1965, abandoned, and a continuation-in-part of Ser. No. 54,398, Aug. 13, 1970, Pat. No. 3,652,107. This application March 5, 1971, Ser. No. 121,299

Int. Cl. F16e *41/04;* **B23b** *41/08*

U.S. Cl. 137—15 **22 Claims**



The pipe fitting is formed from a pair of coupling halves which are fastened together about a continuous pipe. One of the coupling halves includes a built-in cutter assembly capable of severing the pipeline into sections which are subsequently coupled together by the coupling halves. The other coupling half includes a valve compartment which receives a valve element insert-ed between the separated pipe sections. The valve may be adjusted to permit flow between the pipe sections; to divert flow to a branch line; and to cut off flow through the valve entirely. The pipe fitting is insulated from the pipe sections by liners and includes a fluid seal to preclude the escape of fluid from the pipeline following separation of the pipe into sections.

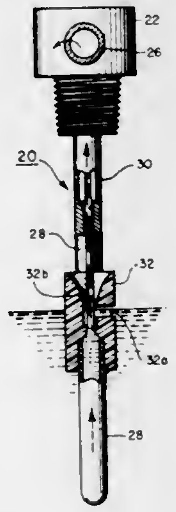
3,703,907
FLUID AMPLIFIERS

George B. Richards, 1212 Ranch Road, Lake Forest, Ill.

Continuation-in-part of Ser. No. 840,119, June 19, 1969, which is a continuation-in-part of Ser. No. 724,385, April 26, 1968, abandoned. This application Oct. 30, 1970, Ser. No. 85,637

Int. Cl. F15c *1/18*

U.S. Cl. 137—81.5 **27 Claims**



A fluid amplifier includes an inlet for directing a laminar fluid power stream along a predetermined axis. A control means downstream of the inlet includes a wall spaced laterally outward of the power stream and at least partially enclosing same with a guide surface portion of the wall curving outwardly away from the predetermined axis. An access opening to the power stream in the wall of the control means permits introduction of a perturbant signal to thereby alter the power stream from a laminar to a substantially turbulent flow pattern of a significantly greater cross-sectional dimension. This transition results in formation of a low pressure condition between the stream and the guide surface of the wall causing the stream to attach to the guide surface and divert away from the predetermined axis. Several embodiments and further features are disclosed.

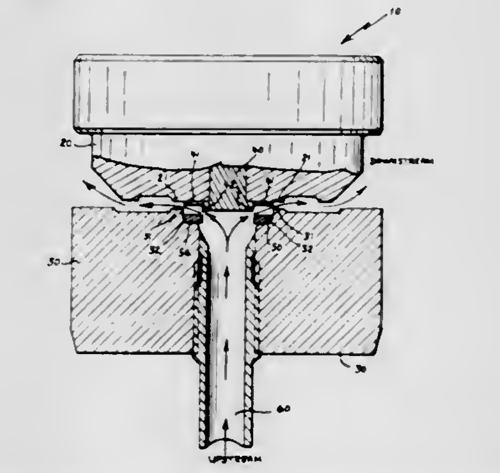
3,703,908
SQUIRT CLEANING POPPET VALVE AND SEAT

Gilbert F. Tellier, Canoga Park, Calif., assignor to The United States of America as represented by the Secretary of the Air Force

Filed July 26, 1971, Ser. No. 166,136

Int. Cl. F16k *1/36*

U.S. Cl. 137—238 **1 Claim**



A poppet valve and seat, in a particle-entrained fluid flow system, which at closure cause a squirt which, by flushing action, prevents particles from remaining on the sealing interfaces of the poppet valve and of the seat.

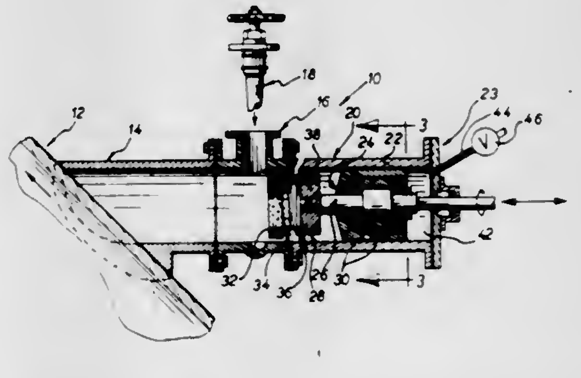
3,703,909
DRILLING APPARATUS

Brian Richard Erb, Montreal, Quebec, Canada, assignor to Hurtsteel Products Ltd., Montreal East, Quebec, Canada

Filed July 14, 1971, Ser. No. 162,569

Int. Cl. F16e *41/04;* **B23b** *41/08*

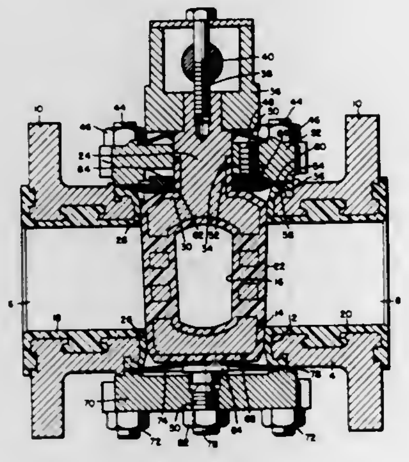
U.S. Cl. 137—318 **12 Claims**



The disclosure herein describes a drilling apparatus for tapping fluid-conveying pipes under high internal pressure and temperature. The apparatus consists of a tubular housing in which a piston supporting a core drill shaft is axially displaceable. The shaft is rotated by an air driven motor and the piston is moved under the action of a working fluid fed into the housing through appropriate hydraulic conduits. The fluid is maintained under a predetermined positive pressure to provide the core drill with a constant cutting feed. In one preferred form of the invention, the air driven motor is enclosed in the piston.

3,703,910
MEANS TO PREVENT EXTERNAL PLUG VALVE LEAKAGE

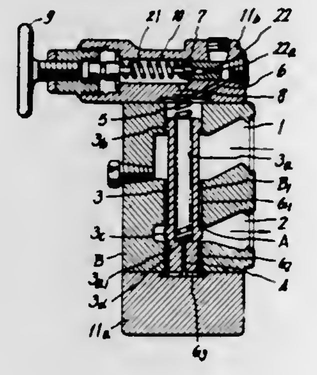
Russell G. Smith, Cincinnati, Ohio, assignor to Xomox Corporation, Cincinnati, Ohio
Filed Feb. 24, 1971, Ser. No. 118,450
Int. Cl. F16k *27/12, 5/02*
U.S. Cl. 137—375 **16 Claims**



The tapered plug of the valve is provided with two adjustments: (a) three plug alignment set screws which properly position the plug to obtain a tight line seal and proper port alignment with the body ports, and properly align external sealing means with plug external seal surfaces, and (2) a plug end adjustment to micrometrically compress a plug shoulder seal against external leakage along the actuating stem.

3,703,911
REDUCING VALVE

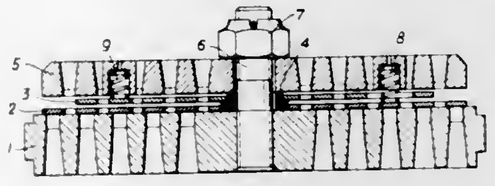
Toshihiko Horikiri, Yokohama, and Ryuta Tsuji, Inba, both of Japan, assignors to Kabushikikaisha Tokyo Keiki (Tokyo-Keike Co., Ltd.), Tokyo, Japan
Filed Feb. 23, 1971, Ser. No. 117,902
Claims priority, application Japan, March 3, 1970, 45/20238
Int. Cl. G05d *16/00*
U.S. Cl. 137—491 **7 Claims**



A reducing valve having a body, inlet and outlet ports formed therein, a spool slidably inserted in the body, lower and upper covers of the body, a poppet valve formed in the upper cover of the body for adjusting the pressure of a fluid in the outlet port, and an adjusting device for adjusting the position of the spool in the body so as to prevent generation of a surge pressure in the outlet port.

3,703,912
PLATE VALVE

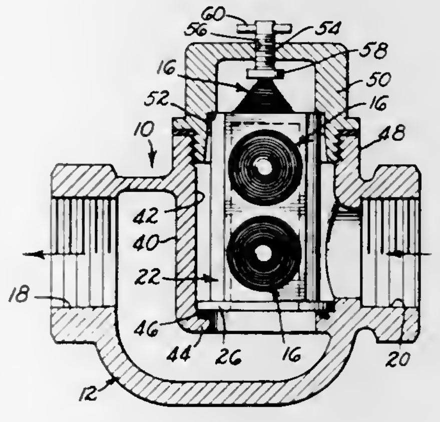
Friedrich Bauer, Vienna, Austria, and Robert Kohler, Schongau/Lech, Germany, assignors to Hoerbiger Ventilwerke Aktiengesellschaft, Vienna, Austria
Filed Feb. 17, 1971, Ser. No. 116,149
Claims priority, application Austria, Feb. 18, 1972, A 1449/70
Int. Cl. F16k *15/08*
U.S. Cl. 137—514 **6 Claims**



A plate valve especially adapted for use in reciprocating compressors and comprising a valve seat, a valve guard spaced from the valve seat, a valve plate serving as a closing member, and a damping plate interposed between the valve plate and the valve guard.

3,703,913
AUTOMATIC RATE OF FLOW CONTROL VALVE

Paul W. Carsten, Malibu, Calif., assignor to CVC Company, Santa Ana, Calif.
Filed Aug. 2, 1971, Ser. No. 168,316
Int. Cl. F16k *15/14*
U.S. Cl. 137—599 **10 Claims**

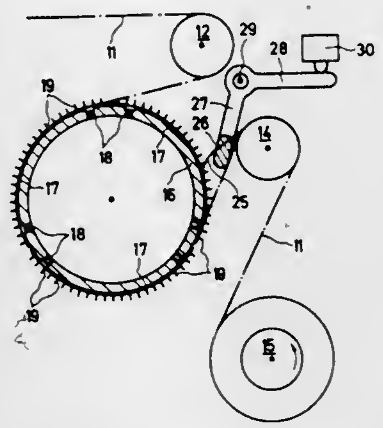


An automatic rate of flow control valve comprising an orifice plate and a conically shaped helical spring including a series of coils of decreasing diameter from a base coil on an upstream face of the plate, the inner diameter of each coil being equal to or greater than the outer diameter of the coils upstream thereof.

3,703,914
ROLL ARRANGEMENT FOR A TEXTILE MACHINE,

Erhard Freisler, Ruti, Zurich, Switzerland, assignor to Ruti Machinery Works, Ltd., formerly Caspar Honegger, Ruti, Zurich, Switzerland
Filed Dec. 12, 1969, Ser. No. 884,596
Claims priority, application Switzerland, Dec. 24, 1968, 19281/68
Int. Cl. D03d *49/20, 51/18*
U.S. Cl. 139—308 **7 Claims**

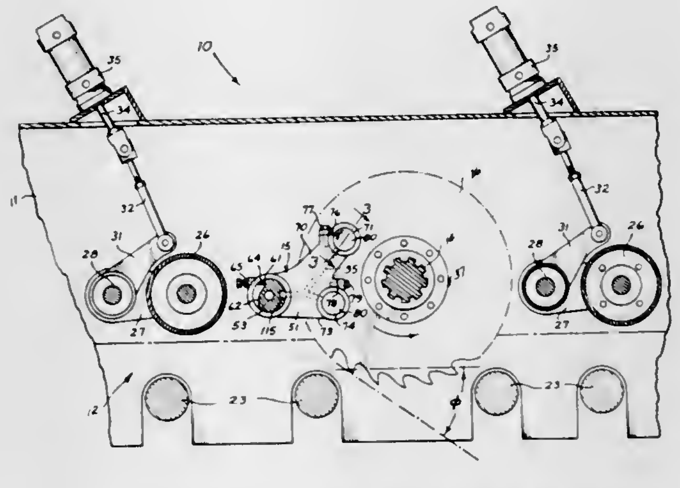
A roll arrangement for a textile machine comprising a rotatable roll, a plurality of curved segments mounted on said roll, the curvature of each of said segments matching the curved form of the roll and outwardly projecting pins carried on the segments. The segments are in the form of plates which are made of metal or plastic material and contain orifices.



Each of the pins have a point at one end and a head at the other, and are secured to the plates, the head of each pin being held in one of the orifices.

3,703,915
THIN KERF SAW MACHINERY

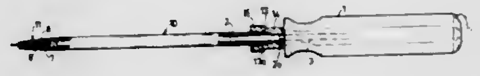
Harry C. Pearson, Beaverton, Oreg., assignor to Portland Iron Works, Portland, Oreg.
Filed Aug. 14, 1970, Ser. No. 63,862
Int. Cl. B27b *5/34*
U.S. Cl. 83—824 **14 Claims**



Thin kerf saw machinery including a saw arbor mounted for rotation above a set of power rollers adapted to transport lumber past the arbor for cutting. A plurality of saw collars are arranged on the arbor in side-by-side relationship, each collar being suspended for free lateral movement along the arbor and adapted to be rotated therewith. Each saw collar supports a circular saw blade fabricated of relatively thin gauge metal for thin kerf sawing. Saw guides are provided for each blade, being retained in control arms positioned adjacent the blades. The saw guides are adapted to exert selective forces on the sides of the saw blades near the gullet line of the blades for independently controlling the position of each blade as it enters the lumber. Each saw guide comprises at least a pair of control pads secured in opposed relationship, one on each side of a corresponding saw blade. The head surfaces of the pads are recessed to form fluid-retaining cups which confine a lubricating cushion of fluid adjacent the sides of the saw blades, when rotating. Fluid for filling the lubrication cups and operating the control pads is furnished from a remote source through a network of internal channels in the control arms. In one preferred arrangement, two sets of saw guides are used on each blade, the sets being separated between 60° and 120° along the outer periphery of the blade.

3,703,916
SCREWDRIVER WITH AN EXCHANGEABLE TIP

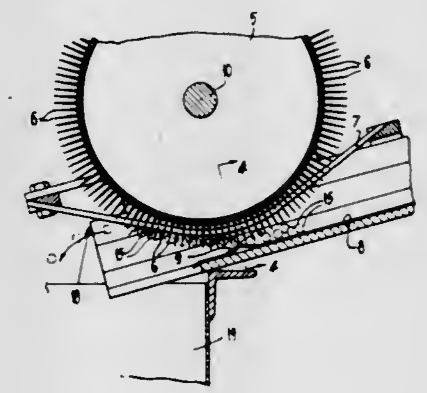
Owe Wilhelm Sundsten, Johanneshov, and Karl Bertil Sune Johansson, Huddinge, both of Sweden, assignors to Skandinavisk Foto Trade A B, Nacka, Sweden
Filed May 19, 1971, Ser. No. 144,976
Int. Cl. B25b *15/02;* **B23b** *31/12*
U.S. Cl. 145—50 R **3 Claims**



In a screwdriver with a handle supporting a coaxial rod and a sleeve surrounding the rod, the forward free end of the rod is tapered to engage, when desired, the inside of the tapered forward end of the sleeve. In the forward end of the rod is a slit for receiving the flat rear end of an exchangeable screwdriver tip. When moving the sleeve axially relatively the rod in one direction by means of a control member, the legs of the rod defining the sides of the slit will engage the inside of the tapering sleeve end and press the legs against the tip to secure it to the screwdriver, whereas movement in the opposite direction will release the tip.

3,703,917
VEGETABLE PROCESSING APPARATUS

Frank Percival Mundy, Donvale, Victoria, Australia, assignor to Pict Limited, Notting Hill, Victoria, Australia
Filed Dec. 28, 1970, Ser. No. 101,546
Claims priority, application Australia, Jan. 26, 1970, 95/70
Int. Cl. A47j *23/00;* **A23b** *7/02*
U.S. Cl. 83—2 **4 Claims**



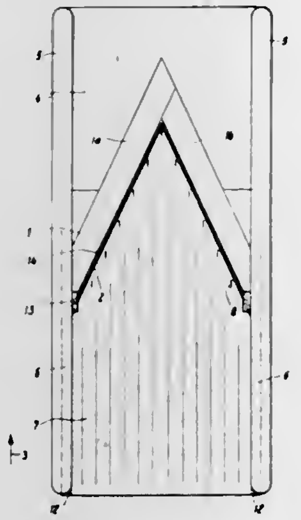
The invention provides apparatus for the pricking of vegetable pulse skins with improved means for guiding the pulses to and removing them from a rotating pin-drum.

3,703,918
HOUSEHOLD UTENSILS

Alfred Borner, Pickliebemer Str. 6, Dudeldorf, Germany
Filed Feb. 16, 1970, Ser. No. 11,477
Claims priority, application Germany, Feb. 17, 1969, P 19 07 858.1
Int. Cl. B26d *3/26*
U.S. Cl. 83—425.3 **5 Claims**

A household utensil for cutting vegetables or fruit into strips includes a base plate having several parallel vertical blades projecting upward from the base plate which are equidistantly arranged in one or more rows at an angle to the cutting direction. One or more horizontal blades spaced above the base plate extend over the working width of the utensil and are located beyond the vertical blades in the cutting direction.

The product to be cut is moved backwards and forwards over the cutting arrangement. The front edge of each of the vertical blades is sharpened or beveled only on the side or face nearer the cooperating horizontal blade.



3,703,919

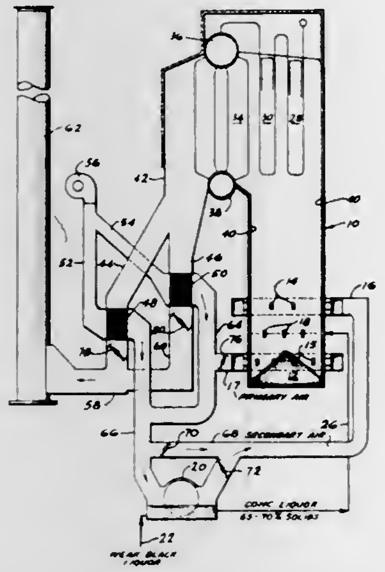
SUPPLEMENTARY AIR CASCADE EVAPORATION

Vincent P. Owens, West Simsbury, and George J. Prohazka, Simsbury, both of Conn., assignors to Combustion Engineering Inc., Windsor, Conn.

Filed Oct. 22, 1970, Ser. No. 83,102

Int. Cl. B01d *1/16, 1/14, 1/22, 47/00;* **F22d** *1/00*

U.S. Cl. 159—4 A **2 Claims**



A chemical recovery unit in which black liquor from a pulping process is burned including a direct contact evaporator for concentrating the black liquor prior to its introduction into a furnace. Preheated air is used as the heating medium in the direct contact evaporator. The moisture laden air leaving the evaporator is used as secondary combustion air in the furnace.

3,703,920

VENETIAN BLIND AND INSTALLATION

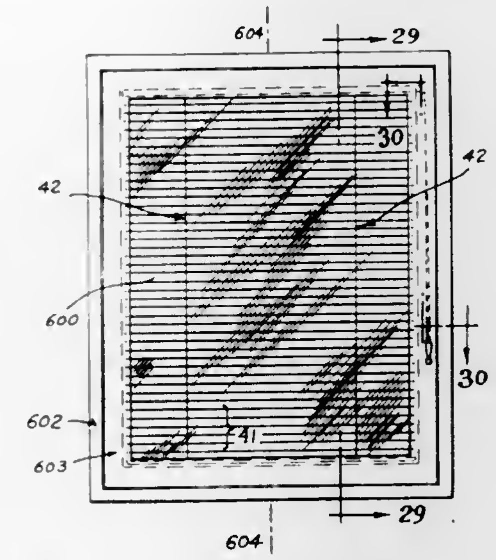
Victor Debs, Staten Island, N.Y., assignor to Levolor Lorentzen, Inc., Hoboken, N.J.

Filed Jan. 28, 1970, Ser. No. 6,395

Int. Cl. E06b *9/02*

U.S. Cl. 160—107 **25 Claims**

The front and rear sidepieces of the ladders are connected to front and rear horizontal runs of a tilt cord at eyelets which are spaced along the horizontal runs. The tilt and lift cords are connected to individual spool members of a cord-operating unit. The blind is adapted to be combined with a window having metal framing and, where the window has spaced glazings, the ladder-and-slat assembly is adapted to be located between the glazings. The spool members of the operating unit are adapted to be located in a channel of the window framing.



3,703,921

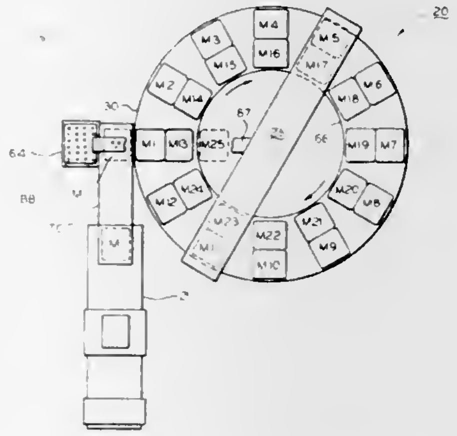
METHOD AND APPARATUS FOR CASTING IN MOLDS RADIALLY DISPLACED ON ROTATING TABLE

William Allan Hunter, Palantine, Ill., assignor to Heatherwill Company, Palatine, Ill.

Filed Nov. 30, 1970, Ser. No. 93,702

Int. Cl. B22d *5/02*

U.S. Cl. 164—130 **20 Claims**



A mould handling machine has a rotating mould receiving table adapted to hold a plurality of filled moulds which are arranged on the table in concentric rows having a center of rotation corresponding to the center of rotation of the table. The table is indexed through successive stop positions in its rotative movement at regular angular intervals to receive a mould ready for pouring. The movement of such mould on to the table radially displaces a poured mould which has gone through a full revolution on the table, and the filled mould at the inner-most row along such radius is displaced to a mould dump at the center of the table. The mould received at a stop position of the table is covered by a mould weight, and the covered mould moves with such weight to a pouring station displaced angularly from the stop position. The poured mould rotates with the table, cooling of the casting material taking place during such rotation. The poured mould is pushed radially inward after completing a revolution, when a fresh mould is received on the table, a filled mould on the innermost row which has gone through the complete cycles of rotation being then pushed to the mould dump.

3,703,922

PROCESS FOR THE MANUFACTURE OF NODULAR CAST IRON

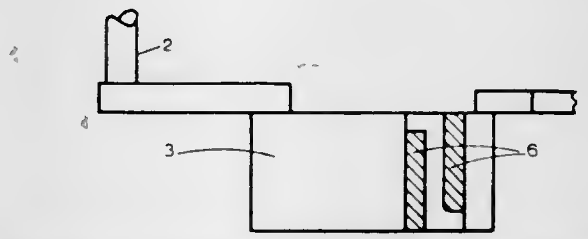
Clifford M. Dunks, and James L. McCaulay, both of Reigate, England, assignors to Materials and Methods Limited, Reigate, Surrey, England

Filed July 16, 1969, Ser. No. 842,204

Claims priority, application Great Britain, July 17, 1968, 33,970/68

Int. Cl. B22d *27/18, 27/20*

U.S. Cl. 164—57 **3 Claims**



The invention relates to a casting process for the production of castings of nodular cast iron. Molten flake iron is poured into the casting mould by way of an intermediate cavity which contains the nodularising agent.

3,703,923

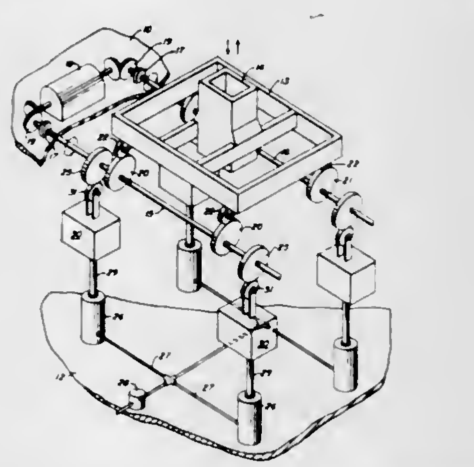
BALANCING MECHANISM AND METHOD FOR CONTINUOUS CASTING MOLDS

Alfred Teplitz, Pittsburgh, Pa., assignor to United States Steel Corporation

Filed Nov. 12, 1970, Ser. No. 88,781

Int. Cl. B22d *27/08*

U.S. Cl. 164—260 **6 Claims**



A mechanism and method for balancing the forces applied to a continuous-casting mold as it oscillates and thereby minimizing vibration in the supporting structure. The mold is oscillated by cams which engage cam followers on the mold frame. Auxiliary cams engage cam followers on a balancing mass to move the latter always in the opposite direction from the mold. The balancing mass is approximately equal to the mass of the mold and parts which oscillate therewith.

3,703,924

APPARATUS FOR INTRODUCING MOLTEN METAL INTO A STRAND CASTING MOLD

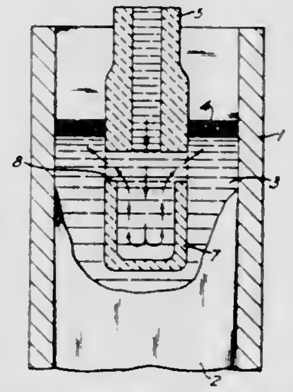
Howard E. Whisler, Harrison; Bhupendra Umedchand Shah, Canton; Gerald Vernon Jeskey, Hartville, and Ray Albert Bloom, North Canton, all of Ohio, assignors to The Timken Roller Bearing Company, Canton, Ohio

Filed Oct. 9, 1970, Ser. No. 79,500

Int. Cl. B22d *37/00*

U.S. Cl. 164—337 **1 Claim**

A nozzle consisting of a pouring tube and a return cup extends down into a strand casting mold for pouring molten metal into it. The return cup is suspended in the mold at the lower end of the pouring tube and is submerged below the liquid level in the mold in a position to receive the metal issuing from the pouring tube and redirect it upwardly along the inside wall of the cup. The cup is dimensioned and located so that the eddies that are formed by the countercurrent flow of metal therein will lose their intensity before reaching the bottom and will die out before reaching the openings in the upper part of the cup through which the upwardly flowing metal escapes into the surrounding mold. The inside of the cup is large enough for its side wall and upper face of its bottom to be free from the eddies, while the outside of the cup is small enough to keep the metal that flows down around the outside of the cup from accelerating. The result is that the molten metal leaving the cup is substantially free of turbulence and flows in such a manner that the objectionable inclusion materials in the metal float up to the top of the molten body of metal in the mold around the cup instead of being carried down into the casting strand to contaminate the product upon solidification.



3,703,925

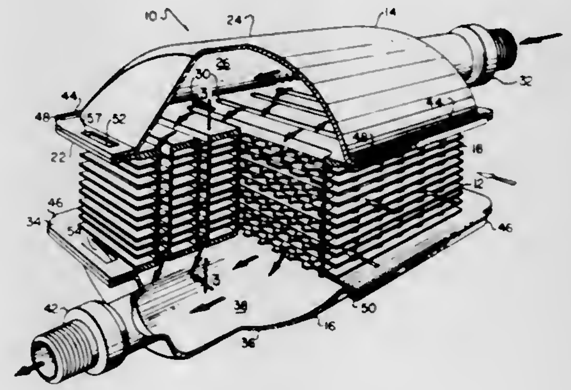
HEAT EXCHANGER CORE

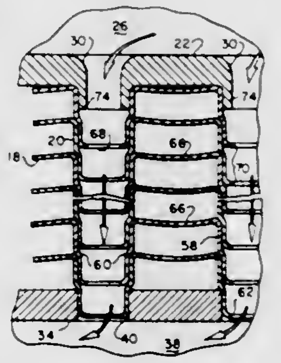
Robert G. Ireland, Indianapolis; Fred L. Manis, Greenwood, and Ross W. Teeguarden, Indianapolis, all of Ind., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed March 11, 1971, Ser. No. 123,343

Int. Cl. F28d *1/04*

U.S. Cl. 165—151 **2 Claims**

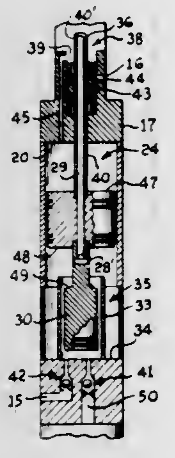




A tube and fin type heat exchanger core made up of unique and identical plate strip structures having formed extrusions, the extrusions nesting when the plates are stacked to form the tubes and the portions of the plates between the extrusions forming the fins. The extrusions form trough-like projections with a number of holes in the bottoms of the trough-like projections to permit the flow of fluid between the plate structures. The walls of the projections have offset portions to serve as spacing means between the plates. A slight crimp or bend is provided in the plate portion between each extrusion to facilitate the assembly of the plate structures regardless of small deviations in the spacing dimensions between extrusions.

3,703,926
DOWNHOLE HYDRAULIC PUMP AND ENGINE IMPROVEMENTS

George K. Roeder, Box 4335, Odessa, Tex.
Filed Dec. 3, 1970, Ser. No. 94,905
Int. Cl. F21b ***43/00***
U.S. Cl. 166—106 **10 Claims**



A downhole hydraulically actuated pump having an engine piston and a pump piston, with the pistons being arranged with diametrically opposed faces which operate within a common fluid chamber. Multiple pump pistons can be actuated by the engine piston so as to enable simultaneous production to occur from a pluraligy of hydrocarbon producing zones, with the produced fluid flowing to the surface of the earth along separate flow paths.

3,703,927
WATERFLOOD STABILIZATION FOR PARAFFINIC CRUDE OILS

Robert Y. Harry, Midland, Tex., assignor to Cities Service Oil Company
Filed June 18, 1971, Ser. No. 154,618
Int. Cl. E21b ***43/24***
U.S. Cl. 166—272 **6 Claims**

Disclosed herein is a waterflooding process wherein paraffinic precipitation is avoided in reservoirs containing paraffinic crude oils, having ambient reservoir temperatures near the pour point of the crude oil. The process of the present invention involves the introduction of thermal energy into the waterflood media in order to raise the temperature of the injected water to about 10° to about 20°F. higher than the pour point or ambient temperature of the reservoir. Through this energy addition, the water injection and subsequent drive of crude oil through the reservoir does not significantly lower the temperature of the paraffinic crude so as to avoid precipitation of paraffin within the reservoir and provide an efficient waterflooding procedure.

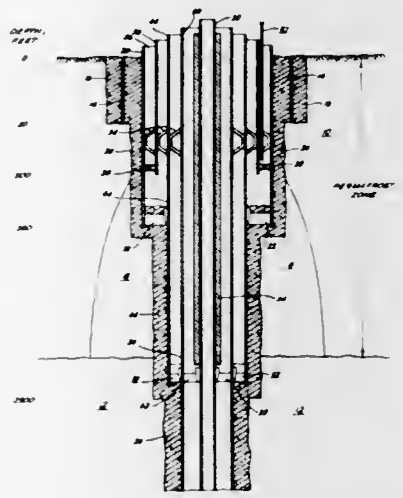
3,703,928
OIL RECOVERY UTILIZING ACIDIC ORGANIC PHOSPHATE SCALE INHIBITORS

Richard S. Fulford, Tulsa, Okla., assignor to Cities Service Oil Company, Tulsa, Okla.
Filed Feb. 24, 1971, Ser. No. 118,503
Int. Cl. E21b ***43/22***
U.S. Cl. 166—275 **1 Claim**

Disclosed herein is a method for the reduction of scale deposition in a formation and fractures about a producing wellbore. In particular, an acidic organic phosphate scale inhibitor is introduced into a waterflooding medium so as to lower the pH of the injection waters, treat the formation and allow the scale inhibitor and water to reach the production well wherein subsequent production from the formation, through the fractures prevents scale deposition.

3,703,929
WELL FOR TRANSPORTING HOT FLUIDS THROUGH A PERMAFROST ZONE

Robert W. Rardin, Anchorage, Alaska, assignor to Union Oil Company of California, Los Angeles, Calif.
Filed Nov. 6, 1970, Ser. No. 87,449
Int. Cl. E21b ***43/24***
U.S. Cl. 166—302 **15 Claims**



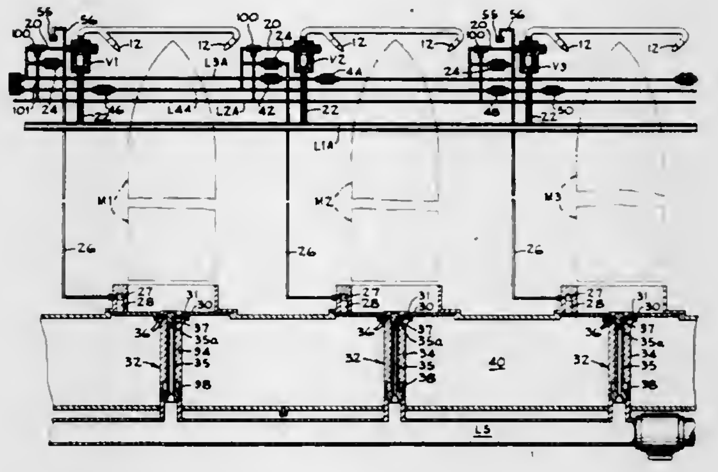
A well adapted to transport hot fluids through a permafrost zone comprising a surface conductor, a short section of refrigerated casing adapted to support the upper section of the well without melting of the surrounding permafrost, a surface casing extending through the permafrost, production casing and production tubing. All casing strings are supported in the well so that the upper sections are in compression. Pressure integrity between casing strings is maintained by packing glands in the well head. Also, a short section of casing can be provided in the annulus exterior of the surface casing to provide a separately enclosed refrigeration reservoir, or to provide for circulation of refrigerant.

3,703,930
AUTOMATIC SPRINKLING SYSTEM

Wilton S. Lofstrand, Minneapolis, Minn., and John G. Montgomery, Arlington, Va., assignors to FMC Corporation, San Jose, Calif., by said Lofstrand
Filed May 27, 1971, Ser. No. 147,485
Int. Cl. A62c ***3/00***
U.S. Cl. 169—2 R **11 Claims**

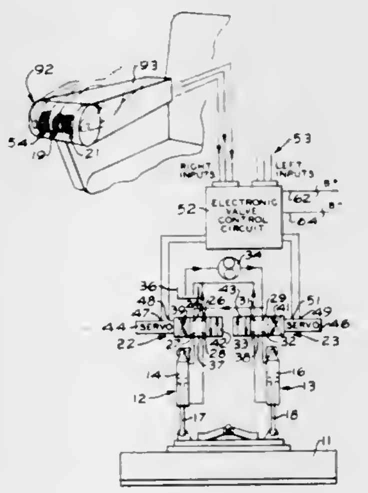
An automatic sprinkling system for a plurality of missiles or other highly combustible objects includes sprinkler heads arranged to supply streams of water individually to each missile. A fire detection means is provided for each missile and a control valve controls the flow of water to the sprinkler heads for each missile with the detection means being hydraulically connected with the control valve so as to open the same upon the actuation of the detection means. A system of check valves

and control lines interconnects all of the control valves so that upon actuation of the detection means for any one missile the control valves of each of the adjacent valves will be opened along with the control valve for the missile which is on fire whereupon a maximum supply of water will be delivered immediately to the area where it is needed. The invention herein described was made in the course of or under a contract with the Department of the Navy.



3,703,931
ELECTRO-HYDRAULIC TOUCH CONTROL SYSTEM FOR EARTHMOVING VEHICLES

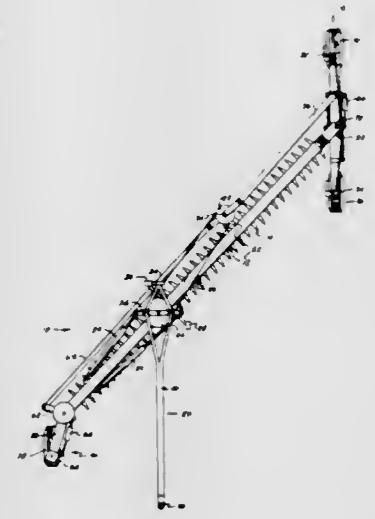
Russell D. Page; Dean C. Klingaman, both of Decatur, and Rolland D. Scholl, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed May 17, 1971, Ser. No. 143,957
Int. Cl. E02f ***3/76***
U.S. Cl. 172—4.5 **15 Claims**



An implement control for an earthmoving vehicle comprising an electro power unit, electro-hydraulic valves and complementing hydraulic equipment for raising or lowering the right and lefthand sides of the implement responsive to electrical control signals, control switches preferably actuatable by operator touch for selectively operably connecting the power unit to the valves to thereby apply the electrical control signals thereto, and an operator manipulatable potentiometer associated with the power unit to selectively influence the system to permit operators to individually select desired degrees of control response. Such arrangement enables vital control components to be more satisfactorily located to enhance operator convenience and machine efficiency and makes possible more effective and economical remote control systems for earthmoving applications.

3,703,932
DISC TILLER

Floyd W. Tuttle, Tribune, Kans., and Ralph W. Tuttle, Ulysses, Kans.
Continuation-in-part of Ser. No. 745,882, July 18, 1968, Pat. No. 3,543,865. This application Aug. 31, 1970, Ser. No. 68,148
Int. Cl. A01b ***69/00***
U.S. Cl. 172—288 **6 Claims**



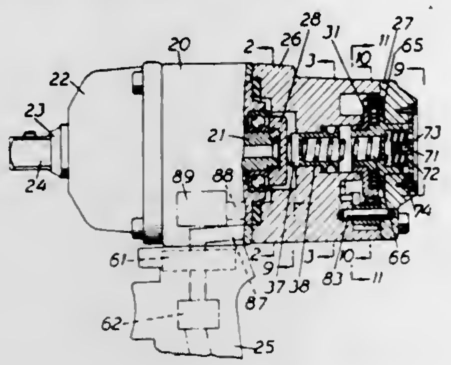
A single-unit and a multiple-unit earth worker are provided. An elongated frame has earth-working members supported therebelow. A transversely disposed support member is centrally and pivotally attached to the rear end of the frame to pivot in a horizontal plane. The forward end of the frame has a pivotally mounted hitch, and a pivotally mounted wheel. The rear support member has a caster wheel mounted on each end. A first link connects the rear support member and the forward wheel, the link restraining same in normal position and operable to horizontally angle the wheel. A second link connects the first link and is rigidly connected to the hitch. A restraining link connects the transverse support member at the rear and the frame to restrict the extent of pivotal movement of the frame about the transverse support member. Turning linkage connects the frame and the hitch member. In the multi-unit embodiment, a plurality of caster wheels is used, one on each end of the frame and on opposite sides thereof. Caster linkage is connected to the hitch and the end caster wheels, such being operable to position the caster wheels relative the frame. Angular linkage connects the hitch and the frame, with such operable to rotate the hitch to proper position in relation to the frame, and turning linkage connects the frame and the hitch.

Numerous types of earth workers such as disc tillers are known in the prior art operable to be turned in either direction, to the right or left. However, these disc tillers are one normally operable to be pulled with the discs inclined in one direction and turn more easily in one direction than the other. Also, many of the prior art devices are adjustable for the depth of the cut by varying the height at the wheel supports; this is usually done by a hand adjustment.

3,703,933
IMPACT WRENCH WITH TORQUE CONTROL MEANS

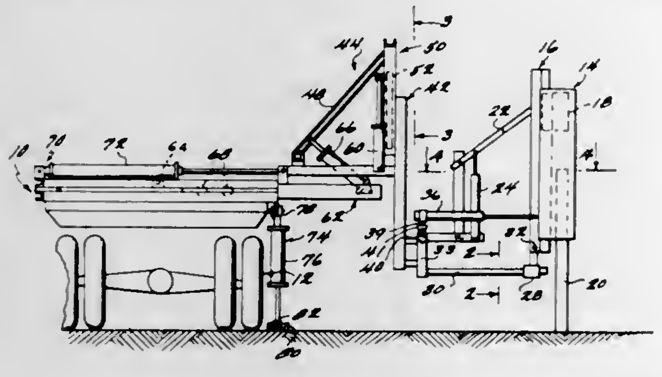
Knut Christian Schoeps, Nacka, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden
Filed April 13, 1971, Ser. No. 133,647
Claims priority, application Sweden, April 24, 1970, 5745
Int. Cl. B25b ***21/02***
U.S. Cl. 173—12 **9 Claims**

In an impact wrench provided with torque control means, a cut-off for the wrench drive motor is activated at attainment in an adding mechanism of a predetermined sum total of the lengths of displacement of a body which in response to rotational resistance at each impact is displaced against the action of a return force.



3,703,934
POST DRIVER

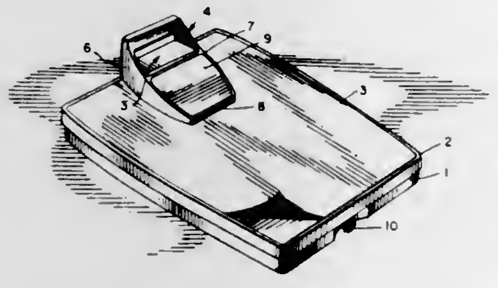
Jack O. Cartner, 1612 Blaine Avenue, Cambridge, Ohio
Filed Feb. 4, 1971, Ser. No. 112,544
Int. Cl. E21c *11/02*
U.S. Cl. 173—43 **5 Claims**



A truck-mounted post driver comprises a conventional driver head disposed laterally of the truck bed and mounted for controlled tilting movement in two vertical planes parallel to and transverse to the longitudinal axis of the truck so that the head may be plumbed with respect to a vertical post. The head is carried by an adjustable frame assembly by means of which it can be positioned horizontally and vertically and retracted to a position on the truck body.

3,703,935
WEIGHING SCALE WITH CONCEALABLE DIAL

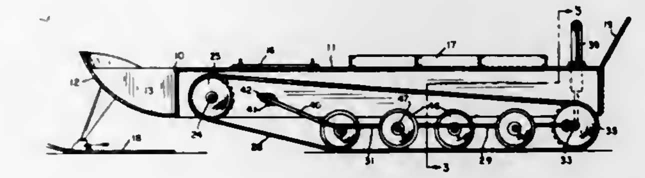
William Y. Hutchinson, Chicago, and Walter P. Kushmuk, Niles, both of Ill., assignors to Continental Scale Corporation, Chicago, Ill.
Filed Dec. 28, 1970, Ser. No. 101,877
Int. Cl. G01g *23/02*
U.S. Cl. 177—124 **11 Claims**



A weighing scale is provided of the type having a weight indicating dial adjacent the weighing platform wherein a cover for said dial is mounted adjacent the dial and is adapted to open and close so that the dial will be exposed to view when the cover is open and covered when the cover is closed, the opening of the cover being actuated automatically in response to weight being applied to the platform.

3,703,936
SNOWMOBILE SUSPENSION

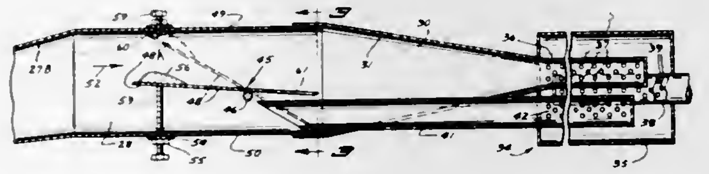
Herbert W. Padwick, 93 Calder Crescent, and Lawrence P. Fay, 628 Royal Street, both of Regina, Saskatchewan, Canada
Filed Sept. 24, 1970, Ser. No. 75,440
Int. Cl. B62m *27/02*
U.S. Cl. 180—5 R **8 Claims**



A suspension for a snowmobile having a driven endless belt thereunder for propulsion; a wheel-supported resilient framework within and riding on the lower part of the belt, carries the rear sprockets for the belt, and supports the front and rear ends of the snowmobile chassis; and adjustable means are provided at one end of the chassis for compressing the framework against the sprockets at the opposite end of the framework for increase in the resilient chassis support, and to maintain the belt tight on the sprockets.

3,703,937
MULTIPLE RPM RANGE TUNED EXHAUST PIPE AND SILENCER FOR TWO-CYCLE ENGINE

William L. Tenney, Crystal Bay, Minn.
Filed May 21, 1971, Ser. No. 145,746
Int. Cl. F01n *1/08, 1/20, 3/00*
U.S. Cl. 181—36 R **34 Claims**

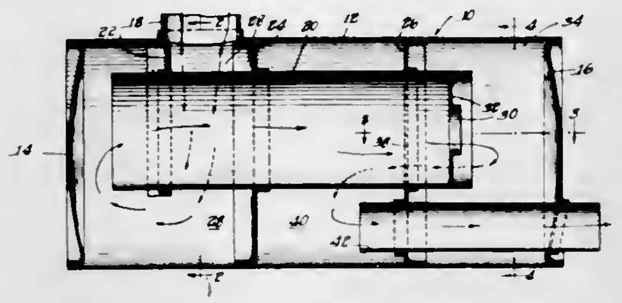


An expansion chamber exhaust system operative to obtain high power output from two-cycle engines at more than one engine rpm range. The exhaust system includes automatic or manual means to change the effective range of engine rpm at which it is providing power increase. At least one valve member is provided, which is open in a low speed position, to permit substantially unrestricted passage of the exhaust gases and exhaust gas pressure waves past the valve member, and which closes at higher engine rpm to provide a pressure wave reflecting surface so positioned to reflect a positive pressure wave to arrive at the exhaust port of the two-cycle engine just before the port closes, at the desired higher rpm range of the engine. The exhaust systems can be made with a fixed positive wave reflecting surface downstream from the valve member, or they may open directly to atmosphere downstream from the valve member, and they may include a silencing muffler, is desired.

3,703,938
EXHAUST MUFFLER

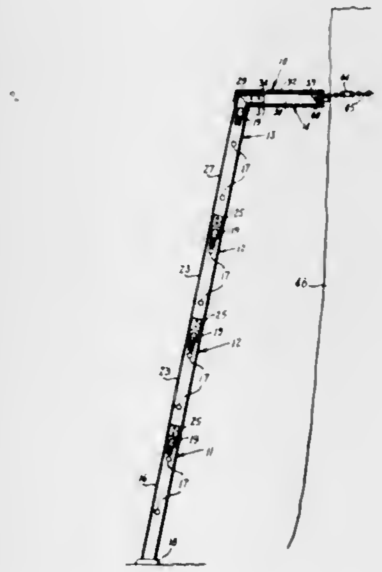
Ralph H. Nelson, Stoughton, Wis., assignor to Nelson Muffler Corporation, Stoughton, Wis.
Filed April 6, 1971, Ser. No. 131,657
Int. Cl. F01n *1/08*
U.S. Cl. 181—58 **10 Claims**

The present invention relates generally to improvements in mufflers, or silencers for internal combustion engines. The muffler device disclosed herein comprises an improved, compact and very unique expansion chamber for receiving exhaust gases directly from an internal combustion engine. This chamber accommodates a tube-like structure which is so disposed that gases initially received by the chamber are first directed against the periphery of the tube-like structure and then into a progressively increasing expansion area surrounding said tube structure.



3,703,939
PORTABLE TREE STAND

Edward Ralph Maxwell, 607 W. Pope Street, Dunn, N.C.
Filed Jan. 15, 1971, Ser. No. 106,747
Int. Cl. E06c *1/10*
U.S. Cl. 182—107 **4 Claims**

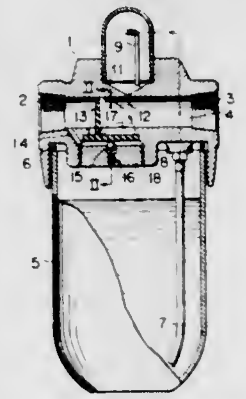


A portable tree stand for hunters use formed of a plurality of sections detachably secured together to support a seat section extending horizontally from the top of the erected sections to engage a tree. A chain and turnbuckle system encompasses the tree and draws a spike carrying bar into engagement with the tree with the spikes embedded in the tree.

3,703,940
AIR STREAM OIL-INJECTING TYPE OILER

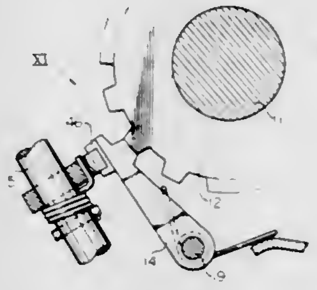
Teruo Morita, Saitama-ken, Japan, assignor to Shoketsu Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed July 29, 1970, Ser. No. 59,319
Claims priority, application Japan, Aug. 1, 1969, 44/72682
Int. Cl. F16n *7/34*
U.S. Cl. 184—55 A **2 Claims**

An air stream oil injecting device includes a base portion having a bore through which air is adapted to flow, a depending oil reservoir secured to the base portion, and an inverted bell-shaped dropping window, sealingly secured to the base portion, and containing an oil dropping pipe, the interior of the dropping window communicating with the air flow passage through a small hole. The air dropping pipe is in communication with an oil feed pipe in the reservoir. A T-shaped damper, of resilient material, such as rubber or the like, includes a main damper portion normally extending across the air flow passage and having substantially the shape of the latter, this damper portion being integral with a leg portion which closes, from beneath, a relatively large opening in the lower wall of the air flow passage, the leg portion being retained in position by a threaded plug of rubber or the like. This threaded plug contains a spring biased check valve including a ball engaged by the leg portion of the damper, and a branch passage connects an upstream passage of the air flow passage to a space beneath the leg portion of the damper for leakage of air around the ball check valve into the reservoir. The opening in the lower wall of the air passage forms a recess or groove into which the tongue portion of the damper can be deflected by air under pressure, flowing through the air flow passage, to provide a substantially uninterrupted air flow through the air flow passage.



3,703,941
PARKING BRAKE

Koichi Ohie, Tokyo, and Koji Enomoto, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Jan. 15, 1971, Ser. No. 106,658
Claims priority, application Japan, Jan. 17, 1970, 45/4262
Int. Cl. B60t *1/06*
U.S. Cl. 188—31 **3 Claims**



A parking brake for use with an automatic power transmission mechanism having a parking gear which is engaged or disengaged by a brake pawl with or from a brake pawl upon shifting movement of a rotary shaft through a mechanical linkage. A cam member is rotatably mounted around the rotary shaft and is operatively connected thereto by a torsion spring. Rotation of the rotary shaft in one direction causes rotation of the cam member in the same direction to move the brake pawl into engagement with the parking gear thereby locking it against rotation in either direction. If the tooth of the brake pawl is misaligned with respect to a space between two adjacent teeth of the parking gear, the torsion spring yields and exerts a pressure on the brake pawl that tends to urge it toward the braking or locking position. When the parking gear moves slightly, the spring force will snap the brake pawl into braking position.

3,703,942
GEL COMPOSITION AND ITS USE AS A BRAKING MEDIUM

John P. Brown, Alto, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Feb. 16, 1971, Ser. No. 115,742

Int. Cl. B61h *9/00*

U.S. Cl. 188—33 **3 Claims**

A gel composition is provided which on a weight basis consists essentially of 94.0 to 94.4 percent water, 5.50 t0 5.75 percent fumed silica, 0.025 to 0.035 percent of a fatty diamine and 0.002 to 0.004 percent of an ethylene oxide polymer. The composition is particularly useful as a braking medium in a method for stopping high speed monorail sleds employed in aerospace research.

3,703,943
DEFORMABLE TRACK BRAKE

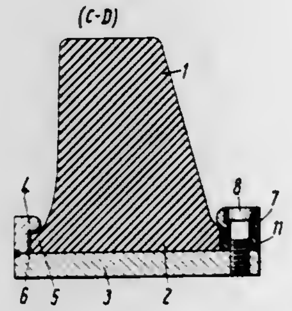
Franz Preinfalk, Langenfeld, and Gunther Meuters, Moers-Asberg, both of Germany, assignors to August Thyssen-Hutte AG, Duisburg-Hambron, Germany

Filed Oct. 15, 1970, Ser. No. 80,858

Claims priority, application Germany, Dec. 24, 1969, P 19 64 812.5

Int. Cl. B61k *7/02*

U.S. Cl. 188—62 **6 Claims**



Deformable rubber track brake having a rubber rail secured to a foundation one sid- of which has a curb which overreaches a flange at the base of the rubber rail. The other side of the foundation is provided with a holder for limiting the lateral movement of the rail.

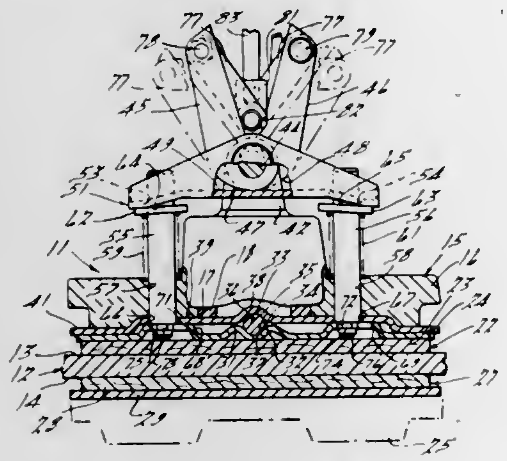
3,703,944
DISK PARKING AND SERVICE BRAKE HAVING SERVO ACTION ON PARKING BRAKE ONLY

Paul G. Hendrickson, Ann Arbor, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed June 1, 1970, Ser. No. 42,310

Int. Cl. F16d *55/224*

U.S. Cl. 188—72.2 **11 Claims**



A sliding caliper type disk brake assembly including a directly actuated brake pad that is movably supported relative to the caliper assembly and an indirectly actuated brake pad that is fixed relative to the caliper assembly. A hydraulic piston and mechanical actuator are provided for moving the directly actuated brake pad into engagement with the associated rotor braking surface and for generating a reactive force to slide the caliper and actuate the indirectly actuated brake pad. Interposed between the hydraulic piston and the directly actuated brake pad are a pair of transversely movable members having inclined surfaces for generating a servo or self-energizing force that is effective only upon mechanical actuation.

3,703,945
CUSHIONING DEVICE FOR MECHANICAL DETAILS IN PHOTOGRAPHIC CAMERAS AND SIMILAR PRECISION APPARATUS

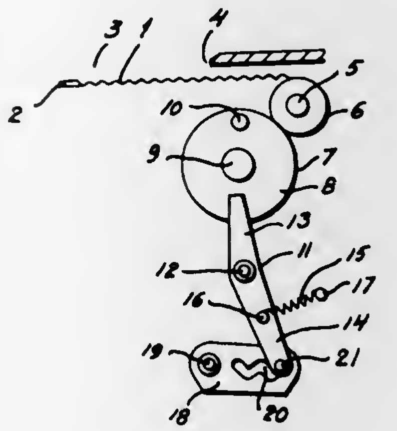
Lennart Gunnar Oskar Dahlgren, Vastra Frolunda, Sweden, assignor to Fritz Victor Hasselblad, Goteborg, Sweden

Filed Dec. 4, 1970, Ser. No. 95,070

Claims priority, application Sweden, May 6, 1970, 6233/70

Int. Cl. F16d *63/00*

U.S. Cl. 188—85 **7 Claims**



A cushioning device for soft, reboundless braking of an intermittently operating, movable part of a mechanical mechanism of a photographic camera or like precision apparatus in which a double lever is journaled adjacent its center, one arm of the double lever is actuated to rotate the double lever about its journal by the movable part, a return spring is attached to the other arm of the double lever and is tensioned by the rotation of the double lever by the movable part, a brake link is journaled at a point offset from the first journaling point, extends toward the first journaling point and has a zigzag groove formed therein and a pin on the other arm of the double lever engages the zigzag groove and causes the brake link to oscillate with an amplitude which increases as the pin approaches the first journaling point when the double lever is rotated by the movable part.

3,703,946
ANTI-SKID BRAKE SYSTEM

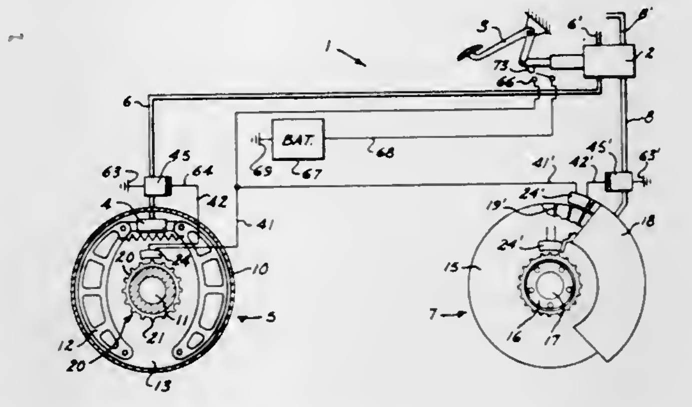
Robert Ondrasik, Elmhurst, N.Y., assignor to Patents & Technolohy Exclusives, Inc., New York, N.Y.

Filed May 1, 1970, Ser. No. 33,661

Int. Cl. B60t *8/08*

U.S. Cl. 188—181 R **14 Claims**

An anti-skid braking system of economical construction in which a sensing device in the form of a switch includes a magnetic actuator responsive to either teeth on a rotor or the vanes of a disc brake to intermittently operate the switch in response to wheel rotation of a vehicle equipped with the system. The switch is connected to a device for pulsing the brake system at the rate of operation of the switch. The system is so arranged that it operates to pulse the brake system only when the brake pedal is depressed and the speed of rotation of a wheel is less than 5 miles an hour. At higher speeds the system is inactive.



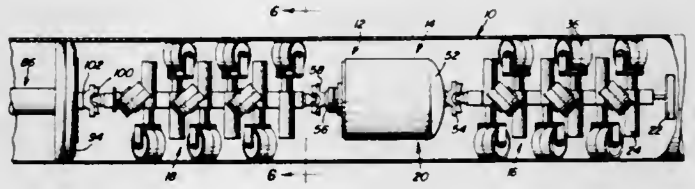
3,703,947
INTERNAL PIPELINE COATING APPARATUS

Ira T. Landrum, Hobbs, N. Mex., assignor to Internal Pipeline Services, Inc., Tulsa, Okla.

Filed March 8, 1971, Ser. No. 121,802

Int. Cl. F16d *57/00*

U.S. Cl. 188—290 **9 Claims**



A slug assembly for passage through a pipeline and to be controllably propelled through the pipeline as a sliding restrictive fluid by-pass piston therein in response to fluid being pumped through the pipeline. The slug assembly includes (1) pipeline interior surface engaging wheeled brake structure for controllably braking the speed of travel of the slug assembly through the pipeline, (2) storage tanks for treating liquids to be applied to the interior walls of the pipeline, (3) a wall friction driven pump assembly for pumping liquids from the tanks through a discharge line, (4) a wall friction driven liquid metering assembly for controllably metering the flow of liquid through the discharge line, and (5) a controlled fluid by-pass sliding piston assembly for developing a travel thrust on the slug assembly for movement of the latter through the pipeline in response to a differential between fluid pressures within the pipeline on opposite sides of the piston assembly, the fluid by-pass portion of the piston assembly incorporating a fluid turbine structure driving a trailing rotary spray head to which the liquid discharge from the liquid metering assembly is supplied.

3,703,948
RECIPROCALLY ENGAGEABLE CLUTCH MECHANISM

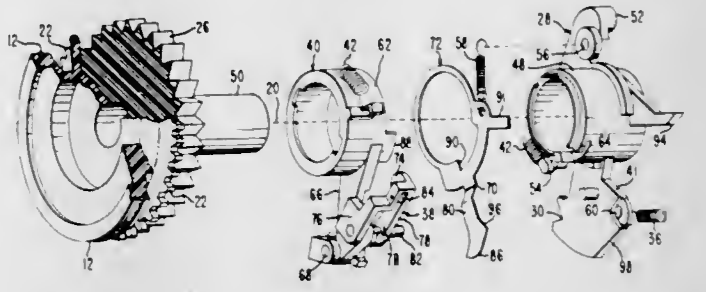
Ronald H. Mack, Plymouth; Robert H. Wilczewski, Northville, both of Mich., and Nicholas Kondur, Jr., Rolling Meadows, Ill., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 26, 1971, Ser. No. 119,170

Int. Cl. F16d *43/00*

U.S. Cl. 192—33 R **18 Claims**

A clutch mechanism for reciprocatingly engaging a driven member with a driving member wherein the driven member is biased in one rotational direction and alternately driven over a predetermined arc in the opposite direction. The respective angular positions of engagement and disengagement of the driven member with the driving member are determined by angularly displaced restraining means that actuate an engagement control member carried with the driving and driven members.



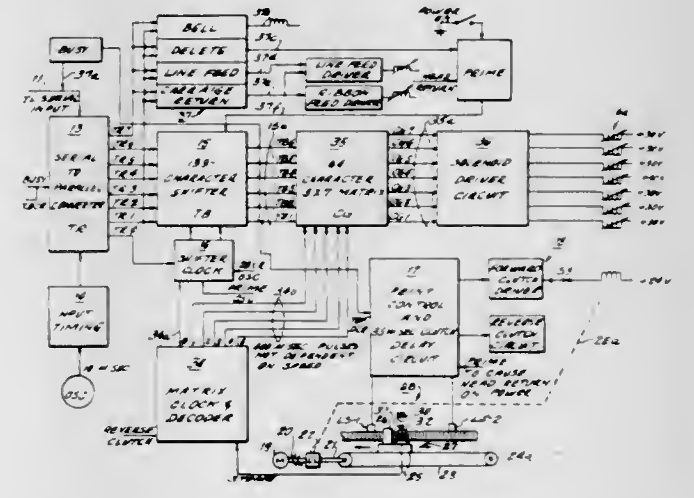
3,703,949
HIGH-SPEED PRINTER

Robert Howard, Roslyn, N.Y.; Prentice I. Robinson, Hudson, and Herbert E. Menhennett, Windham, both of N.H., assignors to Centronics Data Computer Corporation, Hudson, N.H.

Filed May 7, 1970, Ser. No. 35,405

Int. Cl. B41j *25/00*

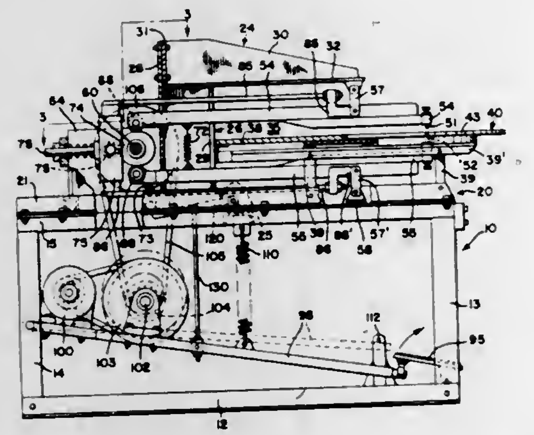
U.S. Cl. 197—1 R **23 Claims**



A high-speed printer of the dot matrix type in which incoming information to be printed, presented in either serial or parallel form, is examined for invalid bits and loaded into a buffer in parallel fashion. Printing does not begin until the buffer is loaded to print a line of the desired length. Printing begins as soon as the first character loaded into the buffer reaches the output stage at which time the actuation of the print wires of the dot matrix are moved across the paper document at a substantially constant speed. Detection of the location of the carriage assembly moving the printer head assembly is performed independent of the movement of the carriage to actuate the print wires at the appropriate locations. Logical circuitry is provided for detecting the presence of invalid characters and the buffer and serial-to-parallel converter are cleared prior to the loading of the next group of characters to be printed on the next line of print. During serial transmission, the printer assembly generates Acknowledge signals to indicate to the transmitting facility that the previous character has been received and stored.

3,703,950
APPARATUS FOR MAKING EMBOSSING PLATES FOR THE BLIND

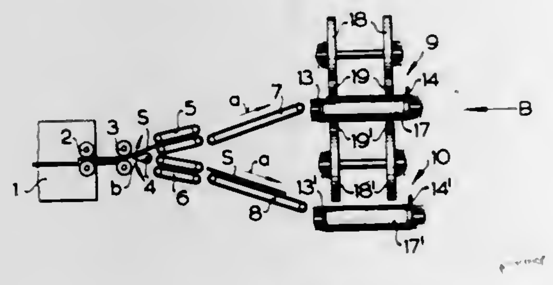
George W. Armstrong, P.O. Box 507, and Conrad E. Siegfried, 1232 High View Drive, both of Fairborn, Ohio
Filed Dec. 14, 1970, Ser. No. 97,671
Int. Cl. B41j *3/32;* **B44b** *5/00*
U.S. Cl. 197—6.1 **8 Claims**



A press for forming braille-like line patterns of raised projections in embossing plates, for use in embossing sheets of paper in a printing press in making coloring books or the like for the blind. The press includes a rotary turn-table upon which the printing plates are supported while being embossed. A pair of forming dies engage the plates on the central axis of the table and form a raised dimple in the plates. The dies are mounted for movement in translation and are controlled in a cycle of operation to advance the plates through a small predetermined increment and then release and re-engage the plates at a new position for the purpose of forming a line of uniformly spaced dimples. The operator may rotate the plate on the platform to create curves and images, and to follow contours, to achieve a desired pattern of lines on the plate. The dies are supported on upper and lower control arms which are mounted for both horizontal and vertical movement, and are controlled by cams to effect the forming and advancing cycle. The cams are driven through a slip-belt type of clutch controlled to a foot pedal. The foot pedal also operates a stop which assures that the dies always come to rest in the open position.

3,703,951
APPARATUS FOR TRANSFERRING WORKPIECES WHICH ARE INTENDED FOR THE MANUFACTURE OF BAGS

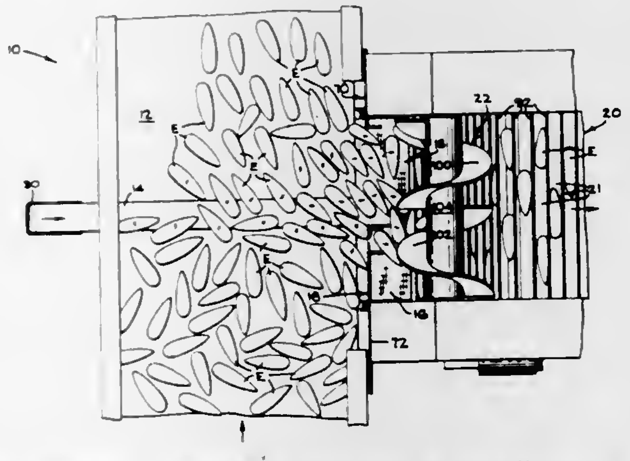
Friedrich Franz Brockmuller, Lengerich Westphalia, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany
Filed June 2, 1970, Ser. No. 42,806
Claims priority, application Germany, June 11, 1969, P 19 29 600.5
Int. Cl. B65g *47/68*
U.S. Cl. 198—20 T **9 Claims**



An apparatus for transferring workpieces, in particular tube portions for the manufacture of bags, which are continuously advance in a row in the longitudinal direction, into a row continuously advanced in the transverse direction comprises two delivery conveyor means for continuously advancing the workpieces in the longitudinal direction of the workpieces. A separator device feeds alternately the workpieces to the two delivery conveyor means. Two transverse conveyor means advance the workpieces in the transverse direction of the workpieces associated respectively with the discharge ends of the delivery conveyor means.

3,703,952
SELF METERING FEEDER CONVEYOR

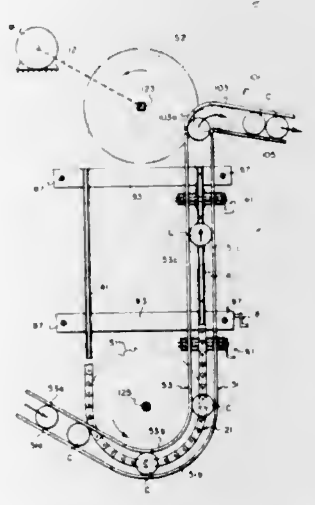
Kenneth G. Kuhn, Danville, and Neal C. Chamberlain, Hoopeston, both of Ill., assignors to FMC Corporation, San Jose, Calif.
Filed Aug. 10, 1971, Ser. No. 170,543
Int. Cl. B65g *37/00*
U.S. Cl. 198—102 **7 Claims**



A self metering conveyor feeding system supplies one or more corn processing machines with husked ears of corn. The system comprises a main conveyor belt and a narrow diverter belt running flat across the main belt for advancing ears of corn across the main belt and through an adjustable gate to feed rolls, the latter transferring the ears to the flights of a take away conveyor. A reserve supply of ears of corn is maintained at the feed roll, and when the reserve is filled, the main conveyor merely advances the excess ears past the gate and on to a downstream diverter system, if such is provided.

3,703,953
CONVEYING ARRANGEMENT FOR CONTAINERS

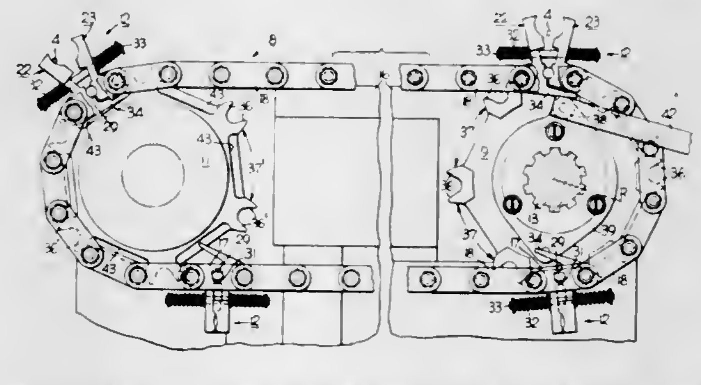
Maynard C. Barker, Temple Terrace, Fla., assignor to Bangor Punta Operations, Inc., New York, N.Y.
Continuation of Ser. No. 788,136, Dec. 31, 1968, abandoned. This application May 27, 1971, Ser. No. 147,682
Int. Cl. B65g *15/14*
U.S. Cl. 198—162 **32 Claims**



A container-conveying arrangement is disclosed, having an endless guided conveyor chain with replaceable chain-guiding and containerengagable conveying caps or pads forming an articulated shingled or saw-toothed conveying surface. The basic conveyor chain and cap assembly is disclosed in several container-conveying embodiments, namely a container elevator, a container lowerator or lowering conveyor, and a horizontal container conveyor, the elevator and lowerator each having two opposed parallel conveyor chains with interfacing shingled conveying caps forming opposed articulated saw-toothed conveying surfaces, and the horizontal conveyor having a single length of endless chain with shingled caps forming an articulated saw-toothed generally horizontal conveying surface.

3,703,954
CONVEYOR SYSTEM FOR WIRE LIKE ARTICLES

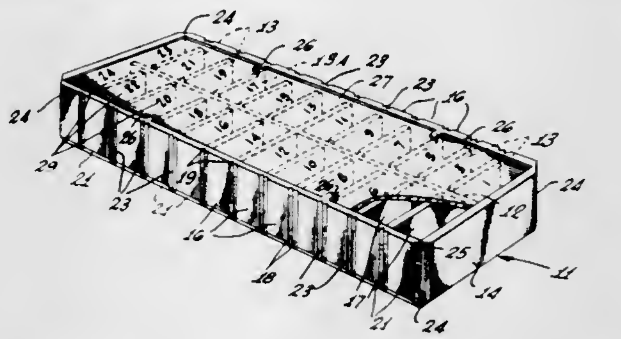
Ragnar Gudmestad, West Allis, Wis., assignor to Artos Engineering Company, New Berlin, Wis.
Filed March 16, 1971, Ser. No. 124,752
Int. Cl. B65g *17/42*
U.S. Cl. 198—179 **8 Claims**



An endless chain having alternate pairs of inner and outer side bars moves in an oblong path around spaced sprocket wheels. Pairs of relatively swingable clamping jaws for electrical wire leads or the like are mounted at intervals on the chain and are nested between opposite side bars and associated hinge bushings thereof. Outwardly extending gripping arms of the jaws are spring biased toward each other and are temporarily swung apart into wire receiving and wire releasing positions by actuating fingers which project inward of the oblong path of chain travel and are engaged by cams at the sprocket wheels.

3,703,955
MULTIPLE COMPARTMENT DISPENSING BOX

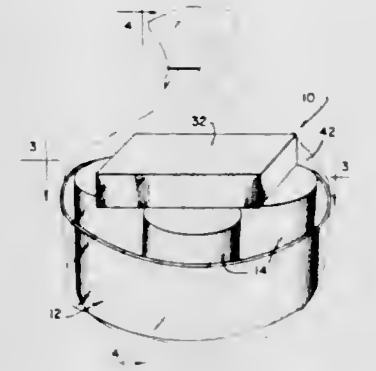
Edward C. Inacker, 11842 Teale Street, Culver City, Calif.
Filed July 23, 1971, Ser. No. 165,572
Int. Cl. B65d *83/04, 17/24, 1/24*
U.S. Cl. 206—42 **10 Claims**



A dispensing box comprising a main body portion having a plurality of independent compartments therein and a cover interlocked with the box to close the compartments. The end walls of the compartments at the opposite sides of the box have reduced sections connecting them to the box proper which may be readily broken through so that the individual compartments may be opened for access by removal of their end walls without displacing the cover nor opening other compartments in the box.

3,703,956
OIL CHANGE KIT

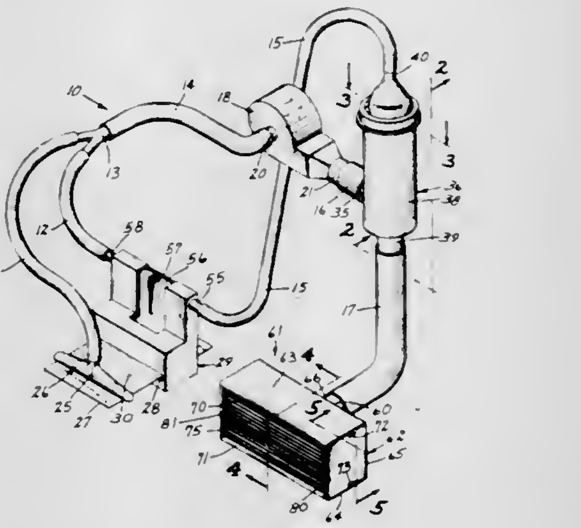
Leon M. Oswalt, Guthrie, Okla., assignor to Cato Oil and Grease Co., Oklahoma City, Okla.
Filed Feb. 16, 1971, Ser. No. 115,576
Int. Cl. B65d *79/00, 85/62*
U.S. Cl. 206—47 R **11 Claims**



A packaged kit comprising a drain pan, a plurality of cans of oil, an adapter mountable within the drain hole of an oil pan for a remote opening and closing thereof, a collapsible funnel, and a plurality of flexible sealable liquid containers, all confined within a transparent wrapper.

3,703,957
PNEUMATIC SEPARATOR, FILTER AND PARTICLE CONVEYING SYSTEM

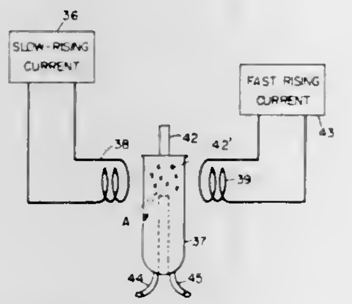
Kenneth W. Swanson, Route 2 Box 300, Excelsior, Minn.; William C. Rolland, 1618 Eustis Street, St. Paul, Minn., and Michael J. Kraft, 3809 E. Sibley, Savage, Minn.
Filed March 6, 1968, Ser. No. 711,114
Int. Cl. B04c *9/00*
U.S. Cl. 209—144 **3 Claims**



In dry copying machines utilizing particulate toner a particle conveying system including a plurality of pneumatic ducts and a blower with a vacuum-type pickup device attached to an inlet of the blower and positioned to remove loose particles from the copies as they egress from the copying machine, a centrifugal separator positioned in the pneumatic system to receive the air and particles from the vacuum pickup device and separate the particles from the bulk of the air, a particle settling chamber having baffles therein attached to the copying machine and receiving separated particles from the separator so as to return them to active use in the copying machine and further having an outlet duct attached to the blower to reduce the pressure therein slightly below atmospheric, and a filter assembly attached to the air outlet of the separator so that air leaving the separator is filtered prior to being returned to the atmosphere. The filter assembly is constructed from an extruded plastic housing having two sidewalls and a joining wall connected to provide a U-shaped cross section and a pleated filter element connected to the sidewalls opposite the joining wall and end walls formed of plastic while in its formable state and subsequently hardened to provide sealing engagement with the ends of said housing and pleated filter.

3,703,958
EDDY CURRENT APPARATUS AND METHOD OF APPLICATION TO A CONDUCTIVE MATERIAL

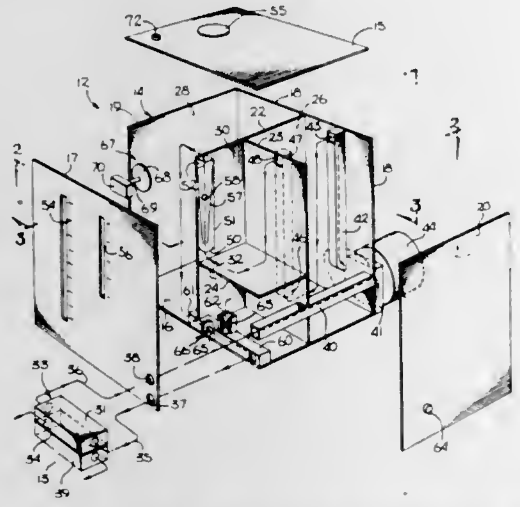
Henry H. Kolm, Wayland, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.
Continuation-in-part of Ser. No. 761,048, Sept. 20, 1968, Pat. No. 3,567,026. This application Aug. 11, 1969, Ser. No. 849,128
Int. Cl. B03c *5/00;* **B01d** *37/00;* **B21d** *26/02*
U.S. Cl. 210—65 **14 Claims**



Eddy current apparatus is disclosed for applying a force to a conductive material. The apparatus employs two magnetic fields. The first, a background or soaking field, is continuous or slow rising and has a skin depth that is greater than the dimension of the material in the direction of field penetration. The second is fast-rising and has a skin depth that is less than said dimension. The two fields are timed or phased and oriented with respect to each other to produce the force in a desired direction. Thus, the conductive material can be particles in a slurry or a sheet of conductive material and the force applied thereto can be toward or away from the field source depending upon the timing or phasing of the fields and the orientation thereof.

3,703,959
DISPOSABLE RECIRCULATING DIALYSATE MODULE

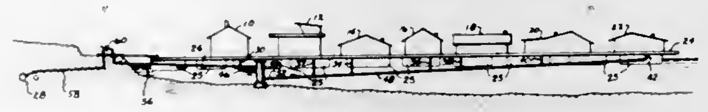
Julius R. Raymond, Northridge, Calif., assignor to CCI Aerospace Corporation, Van Nuys, Calif.
Filed Nov. 17, 1969, Ser. No. 877,090
Int. Cl. B01d *31/00*
U.S. Cl. 210—87 **10 Claims**



A disposable module containing all equipment, instruments and material required to circulate and treat the dialysate solution during the treatment of the patient. The module is of inexpensive construction so that it can be thrown away after a single treatment. When the artificial kidney membrane is separate from the module, two lines connect the module to the artificial kidney membrane and when the artificial kidney membrane is contained in the module, two lines connect the module directly to the patient. The module contains separate compartments for the chemicals which treat the dialysate solution and has separate compartments which serve as a reservoir and as a container for a reconstitution fluid. All passages are formed integral with the module and all instruments are of simple, cheap construction which can be disposed of with the module.

3,703,960
MARINE SEWAGE COLLECTION AND DISCHARGE SYSTEMS

Kenneth F. Kennedy, 3200 Portage Bay Place East, Seattle, Wash.
Filed Sept. 15, 1970, Ser. No. 72,429
Int. Cl. E03f *5/00*
U.S. Cl. 210—121 **16 Claims**



Liquid and solid waste from houseboat dwellings, ships and boats moored to and nearby stationary or floating docks at both fresh and salt water locations is collected and transferred to a sewer system ashore for treatment. This waterfront sewage collection and discharge system is essentially supported and held in place by docks and floats so it is not effected by water level changes caused by tides and waves.

From the outlets of house boats, ships and boats, sewage is directed through flexible couplings and collection pipes, arranged on grade, into partially submerged holding tanks. Each tank is equipped with pumping apparatus to periodically discharge sewage into pipes leading to a sewage system ashore.

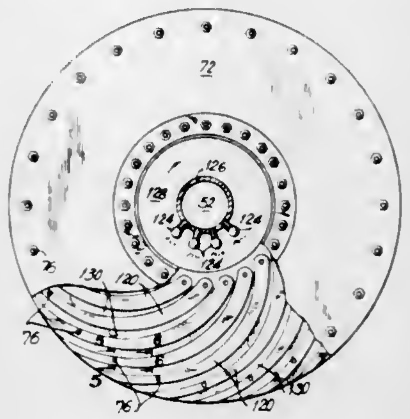
Holding tanks are preferably comprised of several like units singly lowered away into the water and sealed together during their convenient installation. Often sewer pipe sections are used as these holding tank units. When docks and floats are changeable in elevation and sufficiently strong, holding tanks are suspended from them. When docks and floats remain essentially at the same elevation, holding tanks may be positioned on the bottom below or nearby them. Plastic pipes are often used and must be held underwater by restraining means to overcome their bouyancy. Expansion and contraction of component assemblies caused by water motion and temperature changes are always compensated for by flexibly joining some members together.

3,703,961
ROTARY BIOLOGICAL FLOW-THROUGH FILTER

Robert Feuer, Laurelton, N.Y., assignor to Aqua Treatment Industries, Inc., Valley Stream, N.Y.
Filed Feb. 18, 1970, Ser. No. 12,353
Int. Cl. B01d *33/06*
U.S. Cl. 210—151 **11 Claims**

Secondary treatment for comminuted, screened or clarified sewage. The sewage is supplied to a filter assembly consisting of a rotating pair of flanges, one blank and one perforated, with arcuately shaped filter elements sandwiched between the flanges. By providing a large surface area for the filters and

making them of a material to which slime will adhere, biological treatment is obtained. Further, the assembly rotates in the atmosphere providing air without aeration equipment enhancing the aerobic biological purification process.



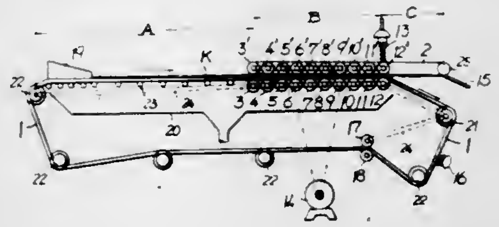
3,703,962
SECURED PLASTICIZED ACETYLATED CELLULOSE HOLLOW FIBER MEMBRANES

Paul G. Schrader, Antioch, Calif., assignor to The Dow Chemical Company, Midland, Mich.
Division of Ser. No. 736,012, June 11, 1968, Pat. No. 3,619,459. This application Sept. 16, 1970, Ser. No. 72,886
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **6 Claims**

An improved method for potting plasticized, acetylated cellulose hollow fibers with a thermosettable resin is disclosed wherein an improved bond between the cured resin and the fiber results when the resin comprises a mixture of the following components: a polyglyoidyl ether of a polyhydric phenol, a reactive diluent, a polycarboxylic acid anhydride, a bond promoter, a thixotropic agent and a flexibilizing agent.

3,703,963
SLUDGE HYDROEXTRACTOR

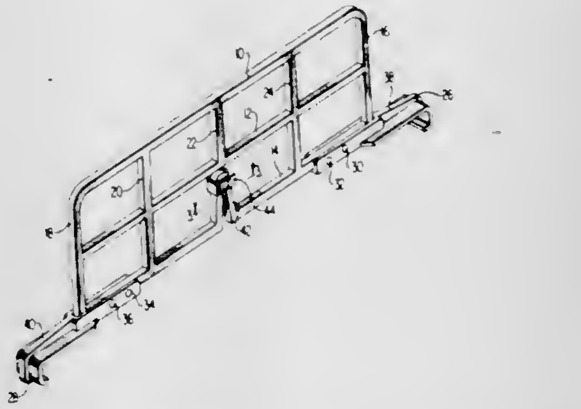
Fusatoshi Eguchi, Fujisawa; Sohei Okamoto, Tokyo-to; Mashio Yamaha, Tokyo-to; Nobuo Matsumoto, Tokyo-to, and Minoru Yokoyama, Tokyo-to, all of Japan, assignors to Ebara Infilco Kabushiki Kaisha, Tokyo-to, Japan
Filed July 20, 1970, Ser. No. 56,572
Claims priority, application Japan, July 24, 1969, 44/58535; Oct. 29, 1969, 44/102755; Aug. 21, 1969, 44/79603
Int. Cl. B01d *33/04*
U.S. Cl. 210—386 **9 Claims**



An apparatus for effecting separation of solids from liquids by repetititve utilization of capillary action provided by a water-absorptive sponge or other like medium, in which a material to be dewatered is fed in uniform thickness on a travelling-endless-water-absorptive sponge belt so that when said material passes a concentration zone, the water in said material is sucked up by the sponge belt so as to increase solid concentration in said material, and then when the belt passes a hydroextraction zone where opposed groups of press rolls are provided, repeated expansion and contraction of the sponge is conducted between the sponge belt and a water-impervious endless belt opposed thereto by means of said roll system, and finally in the scraping zone the dewatered cake is scraped off.

3,703,964
SHELF DIVIDER STRUCTURE WITH LOOP AND COLLAR ARRANGEMENT

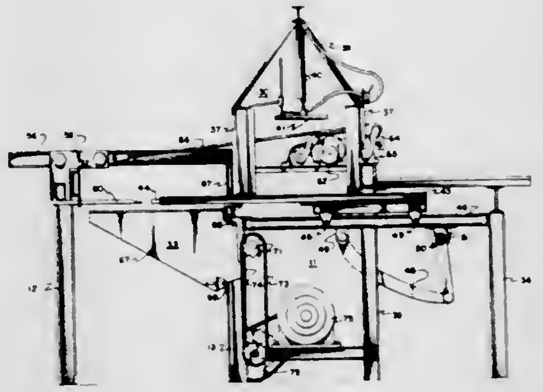
Frank P. Field, 122 Eucalyptus Drive, El Segundo, Calif.
Filed Aug. 4, 1970, Ser. No. 60,852
Int. Cl. A47f *5/00*
U.S. Cl. 211—184 **4 Claims**



A shelf divider comprising a flexible resilient material. A base portion of the shelf divider is integrally formed with a U-shaped section. The legs of the U-shaped section may be resiliently spread so that the longitudinal extent of the base portion is increased by applying tensile force thereto. A collar member may be provided to fit over the U-shaped section of the base portion. The U-shaped section may be tapered along the extension thereof so that the fit between the collar and the U-shaped section becomes tighter as the collar is moved along the U-shaped section toward the base portion. Clamping means may be provided on the base portion of the shelf divider for engagement with a shelf upon the longitudinal contraction thereof in response to the movement of the collar along the U-shaped section.

3,703,965
COMBINATION LUMBER STACKER, STICKER PLACER AND UNLOADER

Jesse C. Coats, P.O. Box 167, Horse Shoe Bend, Idaho
Filed March 8, 1971, Ser. No. 121,661
Int. Cl. B65g *57/26*
U.S. Cl. 214—6 M **5 Claims**



The apparatus of the present invention may be categorized into four assembly groups, namely an unstacker assembly, a sticker placer assembly, a lumber stacker assembly, and an unloading elevator assembly. The unstacker assembly is juxtapositioned to the sticker placer and stacker assemblies perpendicularly at right angles to the sticker placer and assemblies with respect to their directions of travel. The unstacker assembly of this invention comprises a framework having an endless chain carried thereby, a hopper on the forwardmost discharge end of the conveyor, the forwardmost wall of which is distally disposed above the conveyor to provide an opening operable to provide an exitway for only one course of lumber in a stack placed rectilinearly on the conveyor with respect to the direction of travel of the conveyor, a guide bar mounted on the conveyor endless chain being operable to urge the lowermost course of lumber in the stack through the exitway. The sticker placer assembly comprises a multiplicity of sticker magazine rack assemblies having open upper and lower ends being operable to carry a plurality of stickers in a stack, moving table assembly being operable to be reciprocatingly driven under the rack assemblies and to receive a course of lumber thereon from the unloading assembly, channel grooves in the moving table assembly coincident with respective magazine rack assemblies, means in the respective grooves being operable to urge a sticker out of the magazine rack assembly and to cause stickers to be carried in respective channel grooves. The stacker assembly comprises a reciprocatingly driven frame mounted on the machine framework opposite the moving table having a multiplicity of outwardly projecting foot members operatively engaging respective channel grooves of the moving table assembly, the foot members being operable to raise respective stickers in grooves at an angle so that the raised ends of respective stickers tend to engage adjacent boards on the moving table assembly. The moving table assembly and stacker assembly are opposingly driven to form a bi-parting support for respective stickers and lumber on the moving table assembly. When the moving table assembly and the stacker are opposingly driven lumber in engagement with sticker ends raised by the stacker assembly tends to be supported by the stickers while lumber not in engagement with respective stickers in the channel grooves tends to be carried by the table. Hence the lumber is caused to be spaced apart. At the terminal limits of travel of the respective assemblies the stickers carrying the spaced lumber are dropped onto the unloading elevator assembly. The elevator assembly comprises a multiplicity of support members mounted on the frame being operable to be moved upwardly and downwardly with respect to the sticker placer and stacker assemblies.

3,703,966

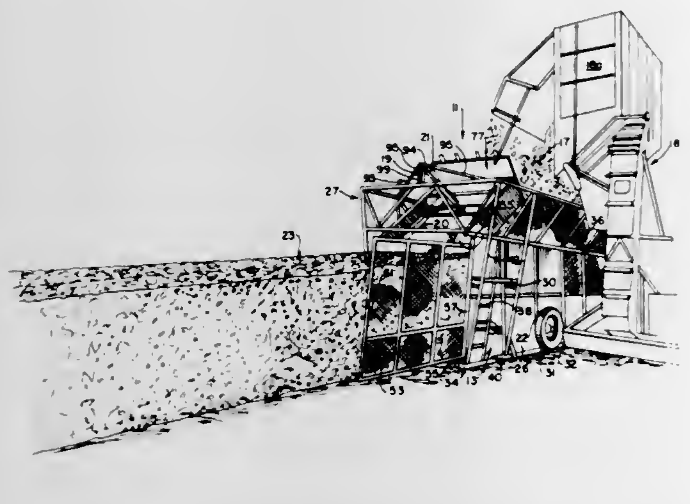
SEED COTTON STACKING APPARATUS

Joseph Kennedy Jones, Raleigh, N.C., and Milton Louis Smith, Lubbock, Tex., assignors to Cotton, Incorporated, New York, N.Y.

Filed Oct. 28, 1971, Ser. No. 193,326

Int. Cl. B65g *57/00*

U.S. Cl. 214—9 **15 Claims**



A seed cotton stacking apparatus with a mechanical compressor means pivotally attached adjacent the rear end of a slip form. The open top - open bottom slip form has upwardly extending side walls and a front end wall which define a cotton receiving zone. The side walls include outwardly flared, upper portions. The compressor means includes a crop contacting platen which has a generally planar central portion and downwardly sloping edge portions. The slip form is supported on longitudinally extending skids which are in ground contact during the rick forming process. A selectively operable wheel assembly is included to pivot a pair of wheels downwardly thereby lifting the slip form to a transport position from a skid position.

3,703,967

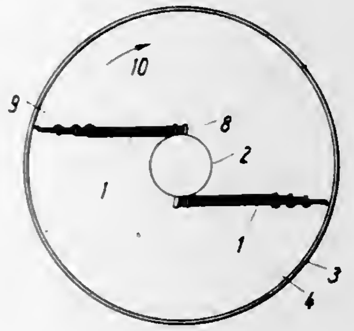
ROTOR ARM FOR SILO DISCHARGING DEVICES

Hans Gessler, Aalen, Germany, assignor to Schwabische Huttenwerke Gesellschaft mit beschrankter Haftung, Wasseralfingen/Wurtt., Germany

Filed Jan. 13, 1971, Ser. No. 106,039

Claims priority, application Austria, Jan. 13, 1970, A 282/70

U.S. Cl. 214—17 D **20 Claims**



A rotor arm for connection to the motor of silo discharging devices with a packet of spring leaves which in their longitudinal direction are slidably held together by holding means while pressure exerting means exert upon those surfaces of said spring leaves which slidably engage each other a pressure slidably holding said spring leaves together over those sections which are located in front and behind said holding means.

3,703,968

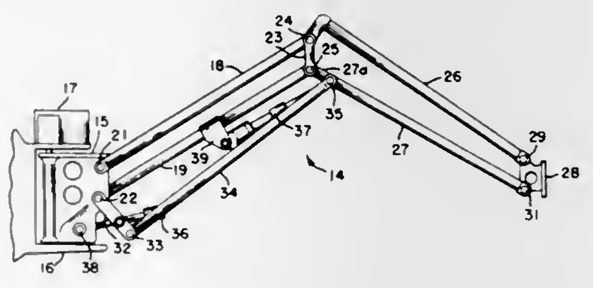
LINEAR LINKAGE MANIPULATOR ARM

Richard W. Uhrich, and Jimmy L. Held, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Sept. 20, 1971, Ser. No. 181,786

Int. Cl. B25j *3/00*

U.S. Cl. 214—147 T **8 Claims**



A manipulator arm comprises two parallelogram linkages in combination with a trapezium linkage. The three linkage systems cooperate to produce movement in spherical coordinates when used in conjunction with three independent actuators. The two parallelogram linkages preserve spacial coordination between the wrist, elbow and shoulder joints and the trapezium linkage permits radial extension of objects carried thereby.

3,703,969

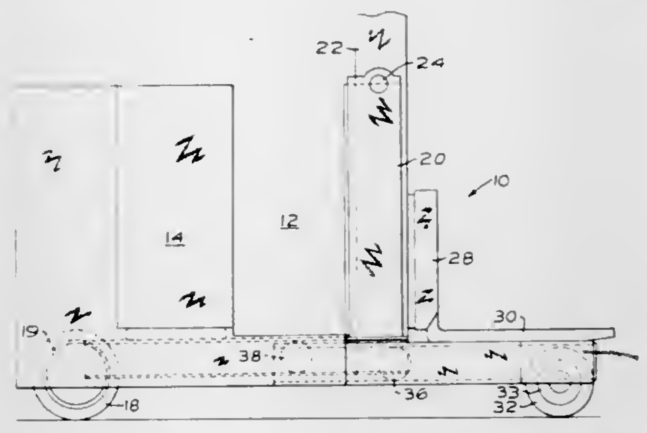
PROCESS OF PLACING A HEAD IN A SPACE WITH A LIFT TRUCK

Walter M. Shaffer, Chesterland, and John T. Crawford, Lyndhurst, both of Ohio, assignors to Towmotor Corporation, Cleveland, Ohio

Division of Ser. No. 822,843, April 14, 1969, Pat. No. 3,616,953. This application June 21, 1971, Ser. No. 155,322

Int. Cl. B66f *9/20;* **B65g** *1/04*

U.S. Cl. 214—152 **4 Claims**



A narrow-aisle lift truck with a wheelbase which can be varied by hydraulic cylinders operable to extend and retract movable arms upon which are mounted non-steerable wheels.

3,703,970

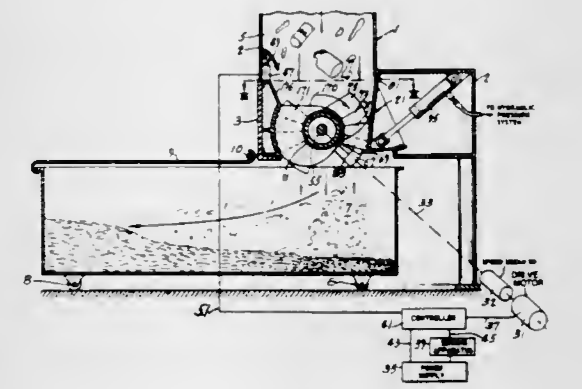
APPARATUS FOR TREATING WASTE MATERIAL

Russell Richard Benson, North Vancouver, Canada, assignor to Benson Industries Limited, North Vancouver, British Columbia, Canada

Continuation-in-part of Ser. No. 46,700, June 16, 1970, abandoned. This application Feb. 23, 1971, Ser. No. 117,892

Int. Cl. B02c *13/09*

U.S. Cl. 241—241 **9 Claims**



An apparatus for treating garbage and trash so that it may be reduced to compact form in bags, blocks or otherwise. The apparatus is typically placed at the bottom of a garbage chute and the apparatus breaks up the garbage into small pieces by means of a rotatable low speed high-torque motor-driven breaking drum running in cooperation with a matching anvil. The breaking drum has several rows of teeth which mesh with teeth-like anvil elements of the anvil, and the teeth on the breaking drum are so gapped as to provide a nip to trap and crush oversize bottles and the like. There are two torque-overload features. One torque-overload feature is an electrical overload device which can stop the rotation of the breaking drum if there is a jam, and carry out the cycle of reversing the drum, moving it forward again, and repeating the aforesaid a predetermined number of times and shutting off the machine after any predetermined number of cycles if the jam has not then been cleared. A second torque-overload feature involves moveable mounting of the anvil such that it can move away from operative position in the event of a jam. The anvil is normally held in operative position by hydraulic means and in the event of an overload the hydraulic means permits the anvil to move away from operative position and restores the anvil to its initial position when the jam is cleared. The apparatus also provides a check means in the form of a series of parallel check plates rigidly mounted on the frame of the apparatus. Each check plate is perforated so that it surrounds the breaking drum. Part of each check plate facing the breaking drum has an abrasive surface. The check means in combination with the other elements of the apparatus carry out the functions of clearing the breaking drum and its associated teeth of material adhering thereto which could cause clogging of the mechanism, which clearing of the drum includes scraping the breaking drum and grinding off tightly adhering material particularly material which may have strong fibers; the check means also prevents processed material from returning "upstream" and directs the flow of processed material into the bin or container so that the breaking drum exerts a "pumping" action on the processed material, so that the processed material may be tightly compacted in the bin or other container.

3,703,971

APPARATUS FOR FEEDING ROD-LIKE ARTICLES SUCH AS CIGARETTES

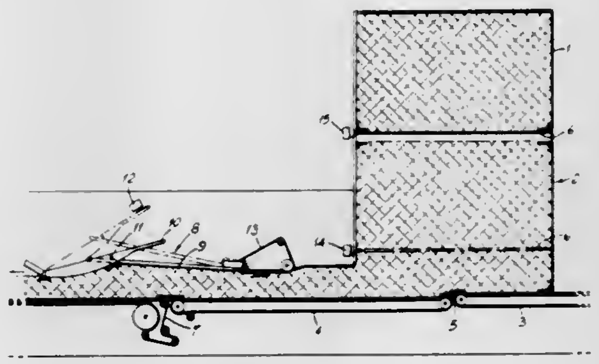
Tom Rowlands, London, England, assignor to Molins Limited, Deptford, London, England

Filed Oct. 2, 1969, Ser. No. 863,271

Claims priority, application Great Britain, Oct. 9, 1968, 47,822/68

Int. Cl. B65f *3/02*

U.S. Cl. 214—302 **10 Claims**



Cigarettes discharged from successive trays into a hopper, and lowered by a platform which is then withdrawn, are received on a conveyor at the bottom of the hopper which feeds them out of the hopper. To facilitate proper feeding, this conveyor is stopped while the platform is withdrawn, raised, and repositioned to receive further cigarettes. A further conveyor outside the hopper moves continuously, at relatively low speed; while cigarettes are being fed out of the hopper at a relatively high speed, some are stored in a reservoir which expands to receive excess, and when the feed from the hopper is stopped, the continuously moving conveyor is able to maintain a continuous flow of cigarettes by drawing from the reservoir.

3,703,972

BALE WAGON

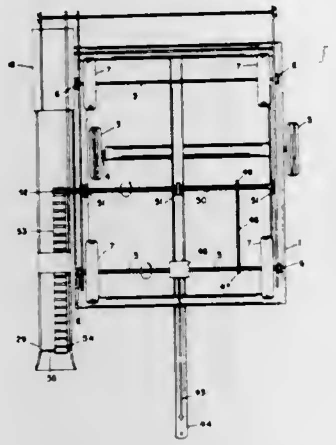
Lawrence J. Muldoon, 1044 West Elm Street, Lancaster, Wis.

Filed Aug. 27, 1971, Ser. No. 175,627

Int. Cl. B60p *1/42*

U.S. Cl. 214—519 **7 Claims**

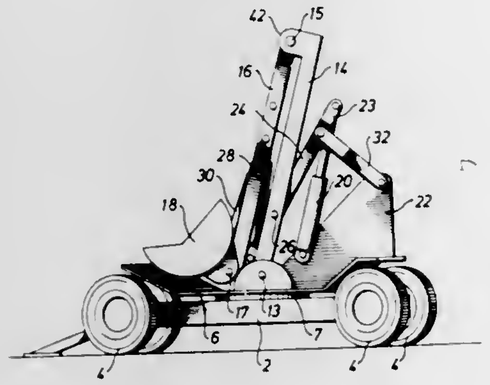
A self-loading and unloading wagon for transporting bales of hay or straw which consists essentially of a rotatably mounted drum having helically arranged internal partitions which define at least one continuous helical bale-receiving channel extending from one end of the drum to the other. The drum can be associated with automatic bale-loading and bale-discharging means and can also be used for handling and mixing dry feed.



3,703,973
MACHINE TO BE USED AS A CRANE, LOADER AND/OR EXCAVATOR

Gustav Lennart Nilsson, 122 32 Enskede, Stockholmsvagen, Sweden

Filed Dec. 11, 1970, Ser. No. 97,110
Int. Cl. B66f *9/00*
U.S. Cl. 214—778 **16 Claims**

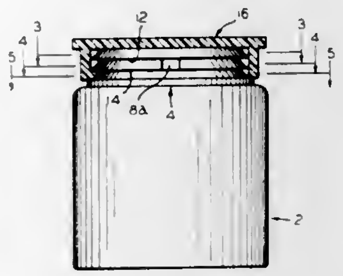


A crane loader or excavator having first and second booms pivoted end to end, plus an auxiliary boom connected intermediate its ends to an intermediate portion of said first boom. Hydraulic cylinders are connected at one end of the auxiliary boom to said second boom and at the other end of the auxiliary boom to the base vehicle and an arm pivotally connected at each end to the auxiliary boom and the base vehicle.

3,703,974
SAFETY CAP

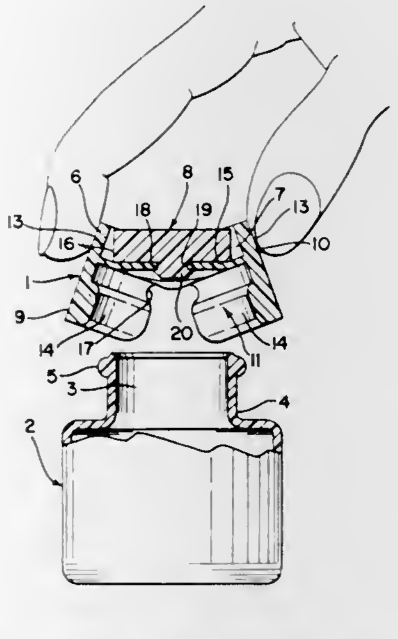
Leo M. Boxer, Village of Whitefish Bay, and Robert W. Boxer, Village of Fox Point, both of Wis., assignors to James D. Pauls; Robert R. Burton; Warren M. Menaker; James Smith; Owen J. Ooms and Eli C. Frank, part interest to each
Continuation-in-part of Ser. No. 881,656, Dec. 3, 1969, abandoned. This application March 8, 1971, Ser. No. 121,821
Int. Cl. B65d *55/02*
U.S. Cl. 215—9 **10 Claims**

A safety cap and container combination is provided wherein the container mouth includes a plurality of spaced ribs or flanges each having a differently located notched-out passageway over which a cap member having at least one projecting internal lug is positioned in a single movement to close the container. In one form of the invention, a bead at the rim of the container mouth may be provided to mate with an internal groove in the cap member to seal tightly the cap member to the container. In order to remove the cap member, the cap member is moved partially away from the container to disengage the bead from the groove, and the lug member is then positioned and aligned with each slot and advanced therethrough in successive fashion to open the mouth of the container.



3,703,975
SAFETY CLOSURE

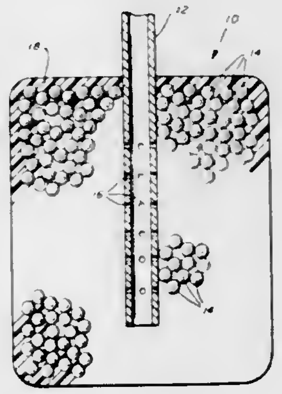
William C. Wittemer, 20102 Clare Avenue, Maple Heights, Ohio
Continuation-in-part of Ser. No. 807,326, March 14, 1969, abandoned. This application June 19, 1970, Ser. No. 47,869
Int. Cl. B65d *21/00*
U.S. Cl. 215—9 **37 Claims**



A safety closure consisting of a container and a cap comprising a core and flexible deformable base having a downwardly opening chamber enclosing the container mouth and an upwardly opening chamber to receive the core; the core is moveable relative to the core receiving chamber between a lock position interfering with certain inward deformation of the base, and an unlock position not interfering with such inward deformation of the base; when the core is in the unlock position, the base may be deformed inwardly to retract certain radial projections on the base from corresponding radial recessions in the container to permit removal of the base from the container — such projections, when fitted in said recessions, normally prevent removal of the base; and, in one embodiment, the base having one upwardly inclined surface defining the inner surface which, when pressure is applied to the outside of the base adjacent such surface, tends to force the core upwardly out of the base; and, in other embodiments, various other core designs requiring different core removal.

3,703,976
HIGH PRESSURE STORAGE VESSEL

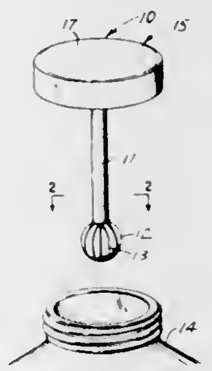
William L. Hughes; Hansel J. Allison, and Ramachandra G. Ramakumar, all of Stillwater, Okla., assignors to Oklahoma State University, Stillwater, Okla.
Filed Oct. 28, 1970, Ser. No. 84,771
Int. Cl. B65d *25/00*
U.S. Cl. 220—3 **5 Claims**



A method of manufacture of a high pressure gas storage vessel having a body of particles in the form of a porous solid mass, a conduit having one end within the porous solid body, the conduit extending from the body providing means of conducting gas to and from the body, and an impervious covering encapsulating the body.

3,703,977
COTTON EXTRACTOR

Bernadette M. Pisarek, 811 Main Street, East Pittsburgh, Pa.
Filed April 14, 1971, Ser. No. 133,891
Int. Cl. B65h *3/22*
U.S. Cl. 221—213 **1 Claim**

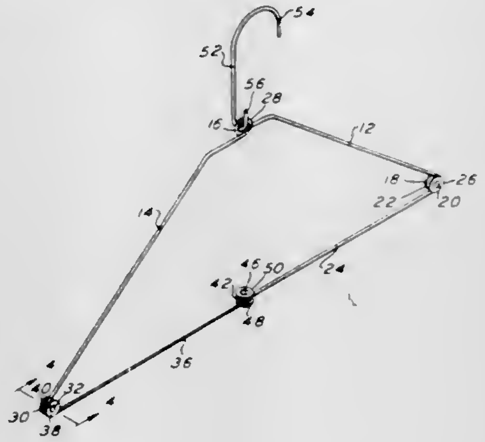


A device for removing cotton from containers, the device including a shaft with a serrated ball for gripping the cotton so to remove it from the container.

3,703,978
COLLAPSIBLE GARMENT HANGER

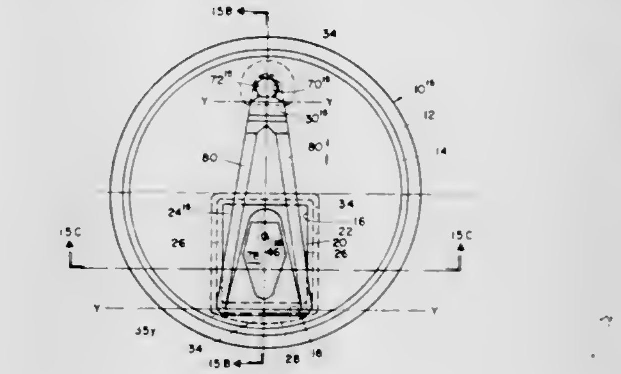
Michael Sammartino, 1727 West Passyunk Avenue, Philadelphia, Pa., and Edward E. Reese, Stokes and Spring Road, Indian Mills, N.J.
Filed Feb. 11, 1971, Ser. No. 114,566
Int. Cl. A47j *51/11*
U.S. Cl. 223—89 **4 Claims**

A garment hanger which is adapted to hold both a coat and trousers and which is collapsible into a compact unit when not in use so that it may be easily stored or transported.



3,703,979
CAN END WITH BONDED SEAL SLIDE

Donald L. Douty, Franklin Township, Westmoreland County, Pa., assignor to United States Steel Corporation
Division of Ser. No. 146,945, May 26, 1971, which is a division of Ser. No. 61,384, Aug. 5, 1970, Pat. No. 3,622,055. This application Jan. 28, 1972, Ser. No. 221,599
Int. Cl. B65d *47/10*
U.S. Cl. 222—484 **45 Claims**



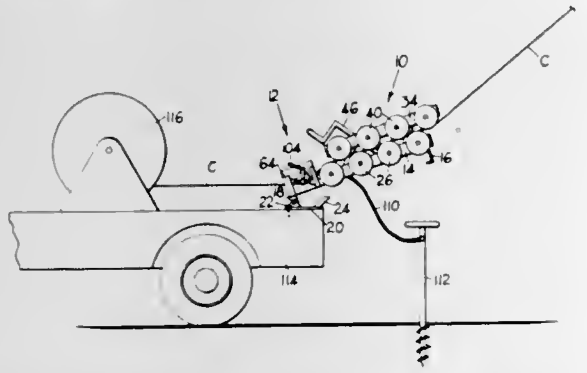
A can end is provided with a pour opening having a pour width. The pour opening is provided with an entry aperture at one end of the pour opening. The entry aperture has a slide width greater than the pour width. The can end has a can end lapping portion and a can end sealing portion adjacent the pour opening and a plane of bulge strength adjacent the entry aperture. A slide is adapted to pass through the entry aperture and has a slide lapping portion and a slide sealing portion. The slide lapping portion is adapted to register with the can end lapping portion, and the slide sealing portion is adapted to register with the plane of bulge strength. A pull tab has a connection to the slide. Engaging means engage the can end lapping portion to press the can end lapping portion into intimate contact with the slide lapping portion and the slide sealing portion into intimate contact with the plane of bulge strength. A pressure barrier material is employed for sealing the intimately contacting can end sealing portion and the slide lapping portion and also for sealing the intimately contacting plane of bulge strength and the slide sealing portion. The pressure barrier material is bonded to the can end sealing portion with the first predetermined shear strength and to the slide lapping portion and to the plane of bulge strength with a second predetermined shear strength less than the first predetermined shear strength. The pull tab is operable to move the slide lapping portion away from the can end lapping portion to break the bond between the slide lapping portion and the pressure barrier material adjacent the can end sealing portion so that the pressure barrier material adjacent the can end sealing portion now functions as an exit and reclosure slide guide. The pull tab is simultaneously operable to move the slide sealing portion away from such plane of bulge strength to break the bond between the pressure barrier material adjacent the plane of bulge strength and the slide sealing portion so that the pressure barrier material adjacent the plane of bulge strength acts as a guide to uncover the pour opening.

ERRATUM

For Class 223—89 see:
Patent No. 3,703,978

3,703,980
TENSION BRAKE ASSEMBLY FOR STRINGING CONDUCTORS

William L. Bright, 0605 S.W. Curry Street, Portland, Oreg.
Filed Aug. 12, 1970, Ser. No. 63,105
Int. Cl. B65h *59/06*
U.S. Cl. 226—90 **10 Claims**

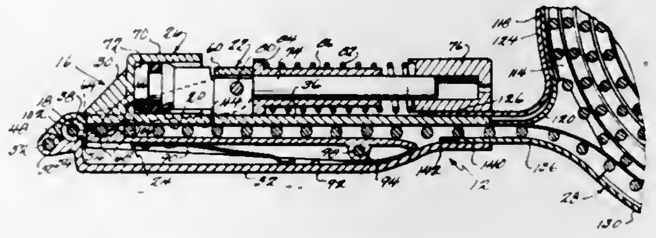


A brake assembly employing a plurality of upper and lower friction sheaves having edge aligned overlapping relationship for frictionally gripping a conductor therebetween. A fair-lead housing is mounted on the infeed end of the brake assembly and employs a horizontal axis guide roller with which the conductor is in engagement forward of the infeed end for feeding to the brake assembly. The guide roller is supported for a combined vertical and longitudinal adjustment relative to the infeed end of the brake assembly for varying the angle at which the conductor engages the first friction sheave in the brake means. Such roller is supported on a hinged carrier capable of being swung outwardly, whereby to displace the roller from the housing for the purpose of laying a conductor flatwise into the fair-lead housing for subsequent engagement with the brake means. The fair-lead housing also has at least one pair of upright rollers providing longitudinal guiding of the conductor through the fair-lead housing, and a top opening is provided in the housing between these rollers so that a conductor can be laid flatwise in the housing. Hinged plate means engage the upper end of the upright guide rollers in one position thereof to connect them to the fair-lead housing and in another position to be out of the plane of the top opening. The fair-lead housing and other conductor engaging means therein are formed of electrically conductive material and are arranged to be connected to a ground line for electrically grounding the conductor.

3,703,981
MECHANISM FOR CONTAINING A NAIL PACKAGE AND FEEDING SUCCESSIVE NAILS THEREFROM

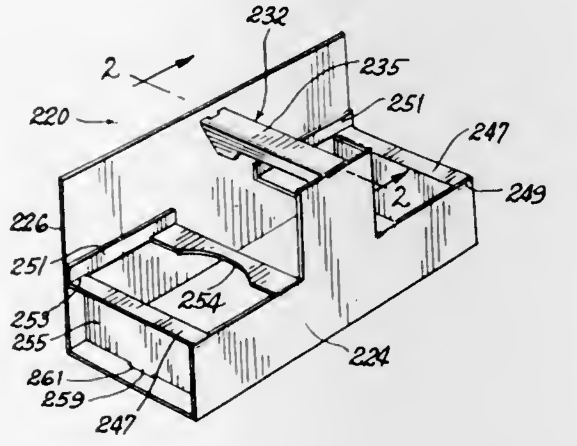
George M. Smith, Pawcatuck, Conn., assignor to Textron Inc., Providence, R.I.
Filed March 18, 1971, Ser. No. 125,772
Int. Cl. B25c *1/00*
U.S. Cl. 227—136 **14 Claims**

A mechanism for containing a fastener package and for feeding successive fasteners from the package into a position to be driven by a fastener driving element during the drive stroke thereof, the fastener package being in the form of a coil of circular headed nails flexibly interconnected in series with their shanks in spaced parallel relation, the mechanism including a nose piece assembly defining an elongated drive track receiving the fastener driving element therein during the operating cycle thereof, and a nail feeding track communicating laterally with the drive track, a ratchet type feeding mechanism for feeding successive nails within the nail feeding track into the drive track, and a magazine assembly for containing the coil of the fastener package, the feeding mechanism including a nail feeding pawl carried by an actuating member movable through a return stroke by a fluid pressure actuated piston and through a drive stroke by a spring assembly which also serves to bias the feeding pawl into its nail feeding position, and a pivoted spring pressed holding pawl provided with surfaces for substantially laterally closing the drive track at the position of communication with the nail feeding track substantially throughout the longitudinal extent thereof so as to prevent successive nails in the drive track from being canted into the nail feeding track during the driving movements thereof by the fastener driving element, the nose piece and magazine assemblies both being of two-part construction movable between an opened loading position and a closed releasably latched operative position, the magazine assembly including a non-adjustable container suitable to support nail packages of different nail sizes, there being provided nail head camming surfaces between the nose piece and magazine assemblies which insure movement of the nails from the container into the nail feeding track in proper nail head guided relation irrespective of the vertical position of the nail heads within the container due to the length of the nail shanks.



3,703,982
CARRIERS FOR CUPS, SANDWICHES AND THE LIKE

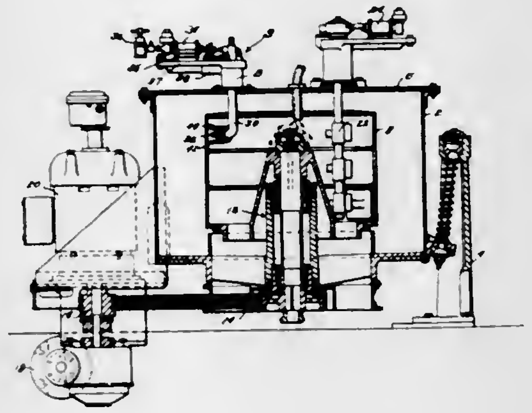
Wallace B. Daughtry, 715 West Elm Street, Arlington Heights, Ill.
Division of Ser. No. 673,712, Oct. 9, 1967, Pat. No. 3,517,868. This application June 10, 1970, Ser. No. 45,013
Int. Cl. B65d *5/46, 5/48*
U.S. Cl. 229—28 **4 Claims**



A carrier is disclosed, made of foldable material, such as corrugated cardboard, solid fiberboard, paperboard, molded pulp, or various solid or foamed plastics, or laminates of these or other materials, for example, and comprising a bottom wall, first and second end walls extending upwardly from said bottom wall, and a handle extending between said first and second end walls, said handle having a horizontal panel and downwardly folded stiffening flanges thereon. In certain embodiments, the handle is folded from the upper portion of one end wall and is adapted to extend through an opening in the other end wall. The handle and the opening are preferably triangular in shape. Locking means are preferably provided to retain the handle in the opening. The carrier comprises one or more intermediate panels folded from said first end wall and secured to said second end wall, the intermediate panels preferably being formed with openings to receive cups or the like. Vertical flanges are preferably folded downwardly from said intermediate panels to provide rigidity. Locking tabs are preferably provided between the vertical flanges and the bottom wall. A space for sandwiches or the like is preferably provided between the intermediate panels.

3,703,983
METHOD AND APPARATUS FOR CENTRIFUGING FLUID MIXTURES AND SELECTIVELY REMOVING LIQUID MATERIAL THEREFROM

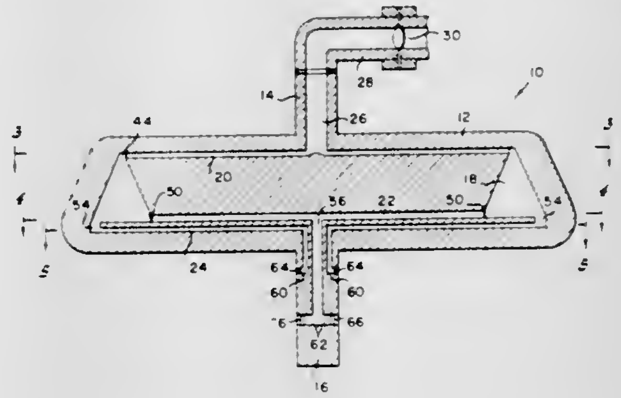
David M. Tholl, Cumberland, R.I., assignor to The De Laval Separator Company, Poughkeepsie, N.Y.
Continuation-in-part of Ser. Nos. 856,786, Sept. 10, 1969, abandoned, and Ser. No. 63,439, Aug. 13, 1970, abandoned, which is a continuation-in-part of Ser. No. 856,786,. This application Jan. 28, 1971, Ser. No. 110,391
Int. Cl. B04b *11/00*
U.S. Cl. 233—19 A **22 Claims**



A fluid mixture is received in a basket and rotated at high speed to form centrifugally separated inner and outer masses of material. Planing surface means is supported within the basket in normally spaced relation to the said inner mass of material. An actuating device forces the planing surface means radially outwardly against the resistance to displacement of the inner mass of material as it revolves. The actuating device is controlled to move the planing surface means radially outwardly under a substantially constant pressure which may be regulated to differentiate between resistance to displacement of the outer mass and resistance to displacement of the inner mass. The extent of travel of the planing surface means may, by means of the regulated pressure, be limited to the boundary region or interface occurring between the inner and outer masses of material. A fluid skimming tube has its tip adjustably supported in the planing surface means in slightly recessed relation such that the fluid portion of the inner mass is progressively removed as the planing surface means is travelled outwardly. When the planing surface means finds the outer mass of centrifuged material, outward travel stops and no further removal of material takes place. Pressure changes occurring when removal of material stops are utilized to control return of the planing surface means to a starting position.

3,703,984
METHOD AND APPARATUS OF CENTRIFUGAL SEPARATION

Harold T. Pruessner, 6015 Rutherglenn, Houston, Tex.
Filed April 21, 1970, Ser. No. 30,533
Int. Cl. B04b *1/00*
U.S. Cl. 233—28 **18 Claims**

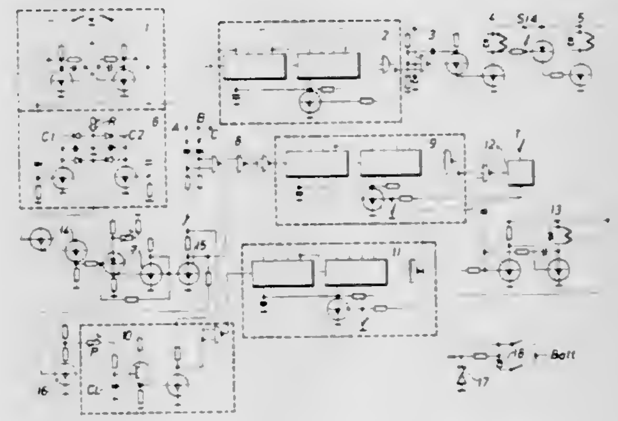


The method is employed to separate components of a solution having unlike specific gravities and includes subjecting the solution to a centrifugal force in a range from 150,000 times the force of gravity or above for a time sufficient to permit the occurrence of substantial equilibrium between solution components. These components are physically separated while the centrifugal force employed to cause separation is maintained.

The centrifuge head employed to accomplish the separation of the solution constitutes a solid metallic disc having an annular separation chamber internally formed adjacent the periphery thereof. An inflow network and two outflow networks formed at different levels in the disc join the separation chamber to the central portion of the disc.

3,703,985
TAXIMETER ARRANGEMENTS

Kjell Willy Berg, Tyreso, Sweden, assignor to Haldex Aktiebolag, Halmstad, Sweden
Filed Aug. 2, 1971, Ser. No. 168,215
Claims priority, application Sweden, Aug. 7, 1970, 10874/70
Int. Cl. G07b *13/10*
U.S. Cl. 235—30 R **2 Claims**



An electronic taximeter comprises a time reference pulse source, a distance travelled pulse source, a time measuring circuit, a level detector, a gate circuit and a fare indicator. When the vehicle is stopped or is running below a selected speed pulses are supplied by the time reference pulse source to actuate the fare indicator while any pulses from the distance travelled pulse source are blocked by the gate. When the vehicle is running at a speed higher than the selected speed, as determined by the time measuring circuit and level detector, the gate is opened so that pulses from the distance travelled pulse source are admitted to the fare indicator and the time reference pulse source is disabled.

3,703,986
SETTING CARRIAGE RETURN MECHANISM

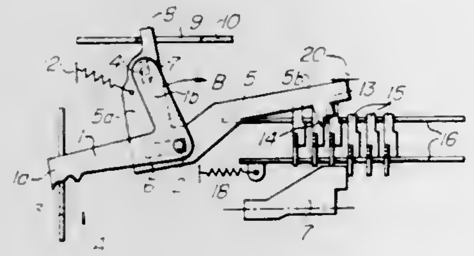
Gian Piero Barozzi, and Giancarlo Horeschi, both of Crema, Italy, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jan. 11, 1971, Ser. No. 105,275

Claims priority, application Italy, Feb. 11, 1970, 20472-A/70

Int. Cl. G06c *29/00*

U.S. Cl. 235—60 R **4 Claims**



A device for the step-by-step motion of a setting carriage of a calculating machine operated in the course of a division operation. A first bell crank is mounted on a stationary shaft for rotation by a rod for operating the machine. The shaft loosely extends through an elongated slot in a second bell crank having one arm operably connected to a swingable arm of the first bell crank and connected by a tension spring to a machine frame and another arm swingable into engagement with one of stops on the carriage. The spring biases the second bell crank so that the latter, when actuated by said first bell crank, is first rotated about the stationary shaft until said another arm engages and depresses one of the stops and then is moved linearly to shift the carriage a step.

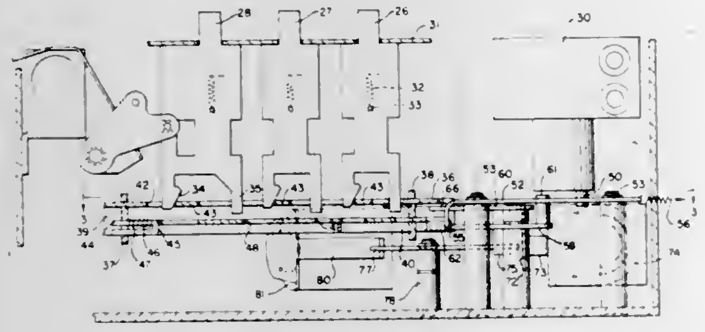
3,703,987
KEYBOARD LOCKING DEVICE

Kazuhiko Ikeda, Tokyo, Japan, assignor to The National Cash Register Company, Dayton, Ohio

Filed Sept. 1, 1971, Ser. No. 177,005

Int. Cl. G06c *25/00;* **G07g** *1/00*

U.S. Cl. 235—26 **13 Claims**



A control mechanism in a keyboard of a data terminal device in which a key lock, when manually rotated in one direction, will selectively lock out one of a number of control keys on a keyboard, and when rotated in the opposite direction, will selectively lock out others of the remaining control keys. Both lock out conditions are released by the energizing of a solenoid at the end of a machine operation. A second solenoid energized upon the initiation of a machine operation locks the control keys in their operated position during the machine operation.

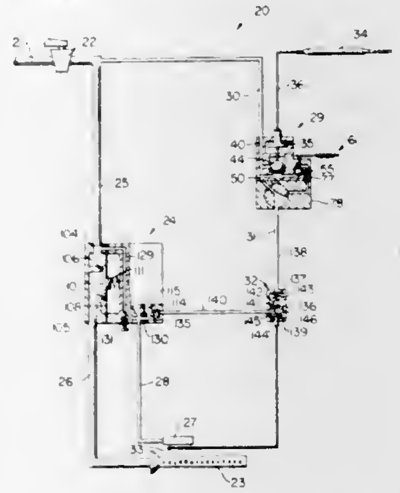
3,703,988
OVEN CONTROL SYSTEM

Charles D. Branson, Greensburg, and Francis S. Genbauffe, Irwin, both of Pa., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 30, 1970, Ser. No. 93,540

Int. Cl. F23n *5/02*

U.S. Cl. 236—15 A **16 Claims**



A fuel control system for an oven having a source of fuel and main burner means. A pneumatically operated main valve is utilized for interconnecting the source to the burner when the main valve is actuated and for disconnecting the source from the main burner when the main valve is deactuated. A manually settable and thermostatically operated valve is provided for interconnecting a pneumatic control signal to the main valve to actuate the same when a temperature effect of the burner is below a set temperature effect and for disconnecting the pneumatic control signal from the main valve to deactuate the same when the temperature effect of the burner is above the set temperature effect, the thermostatically operated valve having a manually settable construction for controlling the cooking temperature effect of the burner and having a modifying construction for modifying the manually settable construction for controlling a burnoff cleaning temperature effect of the burner.

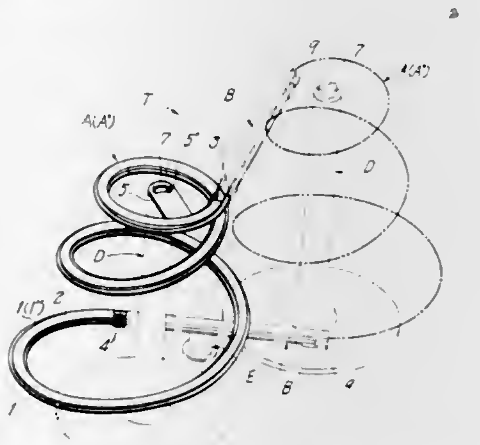
3,703,989
TRACK DEVICE FOR TOY VEHICLE

Eijiro Tomiyama, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan

Filed May 28, 1970, Ser. No. 41,398

Int. Cl. A63h *19/30*

U.S. Cl. 238—10 E **8 Claims**



A track device for a toy vehicle which comprises a spiral track member having inner and outer ends to which other track members can be joined to form a track assembly such as a continuous track and being so constructed as to be axially extensible and to be mounted on a support at its portion adjacent the inner end so that by mounting it on the support an axially spirally extended course of travel for the vehicle can be formed.

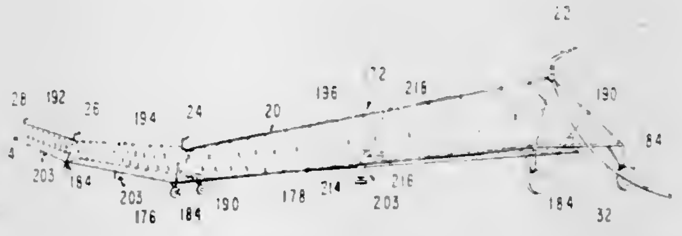
3,703,990
SPRINKLER IRRIGATION APPARATUS AND METHOD

Lennart G. Erickson, 2075 Pioneer Court, San Mateo, Calif.

Continuation-in-part of Ser. No. 767,955, Oct. 16, 1968, Pat. No. 3,610,531, and a continuation-in-part of Ser. No. 815,596, April 14, 1969, Pat. No. 3,578,244. This application March 18, 1971, Ser. No. 125,656

Int. Cl. B05b *3/18*

U.S. Cl. 239—11 **35 Claims**



Apparatus and a method for sprinkler irrigation wherein a lateral for conveying water has a number of sprinkler heads at spaced locations along the same. Means is provided to cycle the fluid control valves for the heads so that the latter will deliver water in a sprinkling pattern intermittently. One form of the apparatus includes a flexible hose for connecting the lateral to any one of a number of hydrants along the length of a water main. This apparatus permits a relatively long field to be irrigated substantially uniformly in a given period of time. Another embodiment of the apparatus utilizes a flexible, self-emptying hose for connecting the lateral to a single source of water. The lateral can be supported from beneath by retractable means when it delivers water and it can be drained after waterflow therethrough has ceased. The lateral can be mounted on a carrier formed of pivotally interconnected unit which may be independently driven.

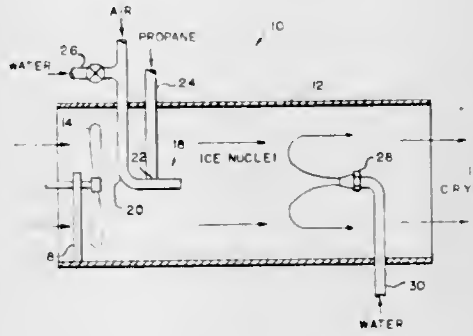
3,703,991
SNOW PRECIPITATOR

William E. C. Eustis, Cambridge, and Wallace E. Howell, Lexington, both of Mass., assignors to Hedco, Inc., Bedford, Mass.

Continuation of Ser. No. 854,103, Aug. 29, 1969, abandoned. This application July 23, 1971, Ser. No. 165,688

Int. Cl. A01g *15/00;* **E01h** *13/00*

U.S. Cl. 239—2 S **14 Claims**



In a snow-making machine which includes a tunnel-like housing, ice nuclei are generated by homogeneous nucleation in a separate zone or part of the air stream within the housing by injecting propane or other refrigerants into a stream of moist air. A propeller at one end of the tunnel moves an air mass through the tunnel carrying the ice nuclei with it. Water slightly above its freezing temperature is discharged through a nozzle disposed in the tunnel and is broken up into droplets. The droplets are discharged in a direction countercurrent to the flow of the air mass and ice nuclei. The air mass supercools the droplets, and they are then infected with the ice nuclei. The ice-infected droplets are then dispersed through a large volume of air to effect the removal of latent heat from the drops to form snow-like particles.

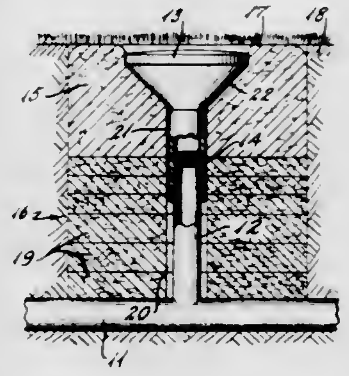
3,703,992
SPRINKLER HEAD PROTECTOR

Lloyd Merryweather, 7160 N.E. 8th Drive, Boca Raton, Fla.

Filed March 17, 1971, Ser. No. 125,150

Int. Cl. A01g *25/06*

U.S. Cl. 239—201 **4 Claims**



A ground inserted multi-layer shield for providing a protective barrier around a fluid broadcasting head wherein the shield is adjustable to various thicknesses and may be made from lightweight material. The shield is constructed of a plurality of members stacked one upon another to achieve a desired overall stack height or thickness.

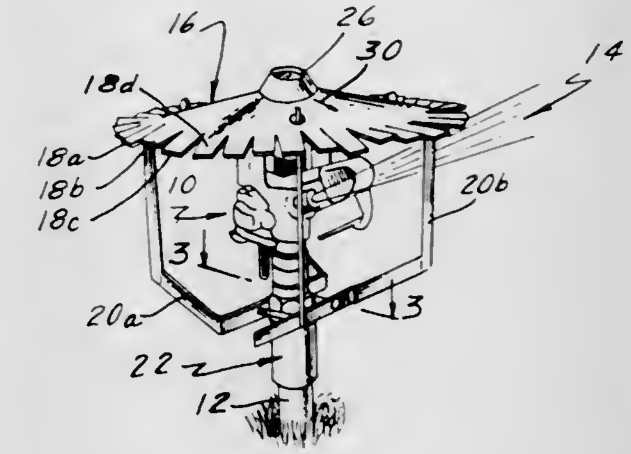
3,703,993
SPRINKLER DEFLECTOR

James W. Schreiner, 2439 Markham Avenue, Thousand Oaks, Calif.

Filed Sept. 23, 1970, Ser. No. 74,580

Int. Cl. B05b *3/08*

U.S. Cl. 239—231 **6 Claims**



The disclosed apparatus relates to lawn-watering equipment, and more particularly relates to a device for producing a watering pattern that can be made to conform to the shape and size of a lawn portion that is bordered by walks, parking areas, buildings, and the like that should not be wetted. Moreover, the disclosed device can be removed and then reinstalled and oriented so that the conformed watering pattern again matches the layout of the lawn portion.

3,703,994
ADJUSTABLE SPRAY RATE ACTUATOR

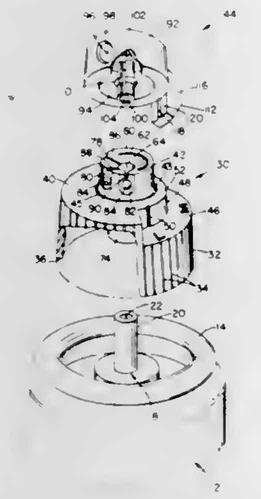
Louis V. Nigro, Saugus, Mass., assignor to The Gillette Company, Boston, Mass.

Filed July 6, 1971, Ser. No. 159,947

Int. Cl. B05b *1/26*

U.S. Cl. 239—397 **23 Claims**

An adjustable spray rate actuator for a pressurized dispensing package includes a base member having a passage coupled to the dispensing valve, a transverse upper surface and a plurality of grooves extending radially outward from the passage. A cooperating cap member has a stem which is snap fitted into the passage, a discharge port in the stem, a transverse surface that mates with the transverse surface of the base member, and a discharge orifice aligned with the discharge port. Rotation of the cap member relative to the base member changes the spray rate as a function of the dimensions of the groove aligned with the discharge port and discharge orifice.



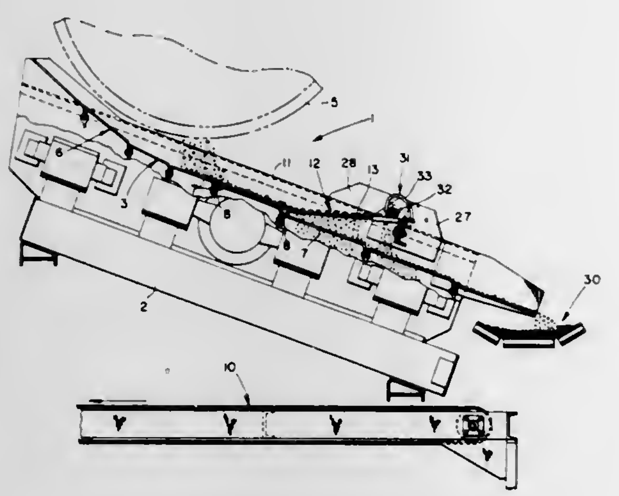
3,703,995
SCREENING APPARATUS

Paul G. Sullivan; Kenneth H. MacLeod, and Joseph E. Kempa, all of Iron Mountain, Mich., assignors to The Hanna Mining Company, Cleveland, Ohio

Filed March 16, 1971, Ser. No. 124,849

Int. Cl. B02c *1/00, 19/16*

U.S. Cl. 241—69 **16 Claims**



Screening apparatus includes a main screen deck having a second screen deck attached to the upper surface thereof intermediate its length. The openings in the second screen deck are larger than the openings in the main screen deck for screening out oversize material and allowing the sized material to fall through for normal treatment on the main screen deck. The oversize material is retained on the second screen deck until the vibrations of the second screen deck or a supplemental breaker mechanism breaks or pulverizes the oversize material to a size which allows such material to fall through the second screen deck and main screen deck for recirculation back through a balling apparatus.

ERRATUM

For Class 241—241 see:
Patent No. 3,703,970

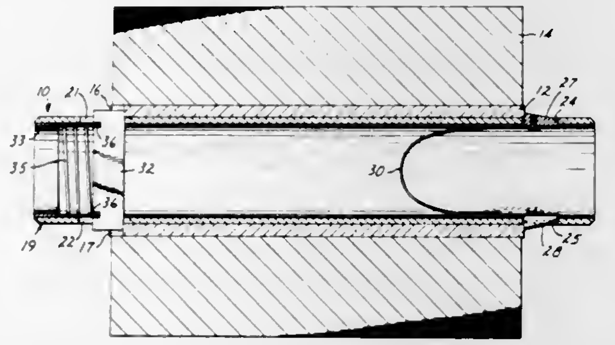
3,703,996
CORED ROLL ARBOR

John W. Ulseth, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed March 1, 1971, Ser. No. 122,562

Int. Cl. B65h *19/02;* **A47k** *10/22*

U.S. Cl. 242—68 **9 Claims**



An arbor for supporting a roll of sheet material wound on a hollow core having axial slots formed in one end thereof. The arbor comprises a cylinder slidably fitting into the roll core and supporting axially movable keys rotatable with the cylinder and biased to fit into the core end slots to positively couple the roll core to the arbor for rotation therewith. Axially stationary and radially biased wedges are supported by the cylinder and abut the opposite end of the core to restrict axial movement of the roll core and maintain the keys in the core end slots.

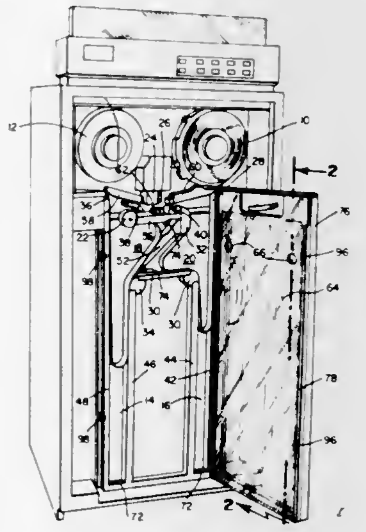
3,703,997
DOOR CONSTRUCTION IN A MAGNETIC TAPE DRIVE SYSTEM

August P. Epina, Boulder, and Paul O. Pearson, Longmont, both of Colo., assignors to Storage Technology Corporation, Boulder, Colo.

Filed June 25, 1971, Ser. No. 156,618

Int. Cl. G11b *15/58, 23/12*

U.S. Cl. 242—182 **15 Claims**



The vacuum buffer zone of a computer magnetic tape drive unit is covered by a door having two parallel plates of glass. By channeling acoustical noise generated by the unit into a chamber formed between the glass plates through openings in the inner glass plate, a substantial reduction in noise is achieved. In addition, the openings permit the chamber to be evacuated before the tape is drawn down into the buffer zone. As the chamber is evacuated, the atmosphere forces the outer glass plate and the door frame against the inner glass plate which then forms a vacuum tight seal between the inner glass plate and guide members in the buffer zone.

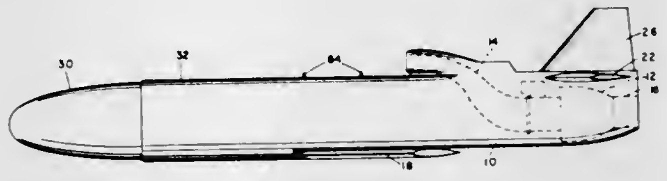
3,703,998
DRONE AIRCRAFT WITH TELESCOPIC FUSELAGE

Peter F. Girard, La Mesa, Calif., assignor to Teledyne Ryan Aeronautical Company, San Diego, Calif.

Filed Dec. 28, 1970, Ser. No. 101,558

Int. Cl. B64c *1/28, 3/56*

U.S. Cl. 244—13 **5 Claims**



A drone type aircraft having a telescopic fuselage and folding aerodynamic surfaces to facilitate installation in a limited capacity bomb bay or storage compartment of a launch aircraft. Prior to launch, the drone is lowered from the aircraft on a supporting frame, the aerodynamic surfaces are extended, and the nose section of the fuselage is extended. The added fuselage capacity is used as fuel tankage, which is filled from the launch aircraft to increase the operating range of the drone.

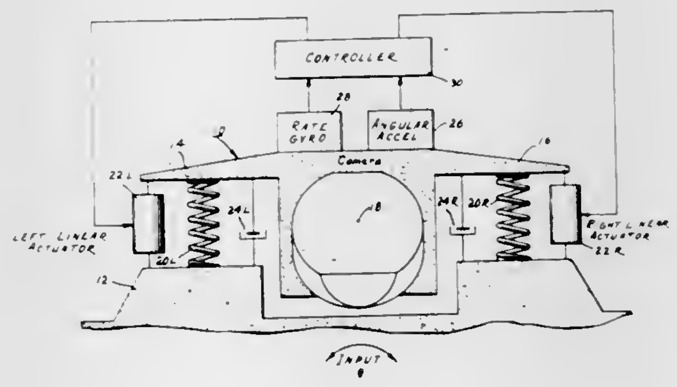
3,703,999
WIDE BAND STABILIZER

Edward Louis Forys, Pasadena; Leroy A. Lofftus, Glendale; Richard Milton Malueg, Glendora, and Albert F. Montalbano, Alhambra, all of Calif., assignors to Actron Industries, Inc.

Filed Dec. 12, 1969, Ser. No. 884,404

Int. Cl. G03b *17/56*

U.S. Cl. 248—20 **25 Claims**



For use in a system in which only translational motions of apparatus are acceptable, an apparatus stabilizing combination is disclosed which utilizes rotational motion sensors in combination with active, linear actuators to correct and compensate for "pitch" and "roll" forces. The suspension system includes the parallel combination of a low stiffness spring isolator with an active, linear motion device.

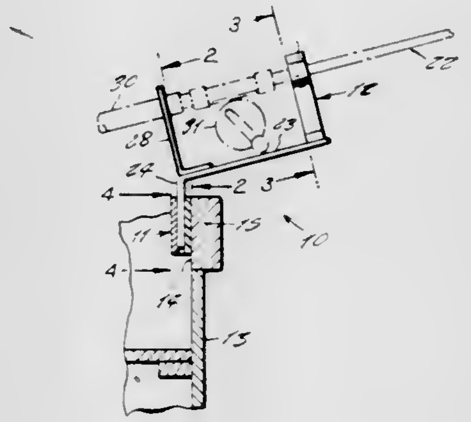
3,704,000
FISHING ROD HOLDER

Elmer F. Nelson, and Olive Nelson, both of 155 W. 4th South, Provo, Utah

Filed Oct. 28, 1970, Ser. No. 84,574

Int. Cl. A01k *97/10*

U.S. Cl. 248—42 **3 Claims**



A device for readily supporting a fishing rod outwardly of a boat so to allow free movement of a fisherman in the boat, the device including a mounting bracket fixedly securable to the boat, the mounting bracket removably receiving a pole holder upon which the fishing pole is placed.

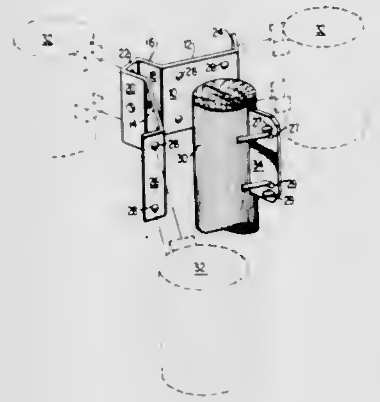
3,704,001
MOUNTING BRACKET

Clifford E. Sloop, 2230 10th Street, Columbus, Ga.

Filed Nov. 17, 1970, Ser. No. 90,272

Int. Cl. H02g *7/20*

U.S. Cl. 248—221 **6 Claims**



A mounting bracket for supporting electrical power transformers in clusters of three is disclosed. A first embodiment of the invention comprises a one piece, substantially V-shaped bracket adapted to be mounted to a utility pole and configured to support transformers at the ends of each of its legs and at its vertex. The bracket may be mounted either by direct bolting to a pole, or by use of an island plate abutting a pole and fastened to the legs of the bracket. A second embodiment of the invention may be secured to a pole in the same manner, is also substantially V-shaped, but is assembled of several parts. This embodiment permits angular adjustment of the transformer mounting positions.

3,704,002
DISCONNECTABLE COUPLINGS

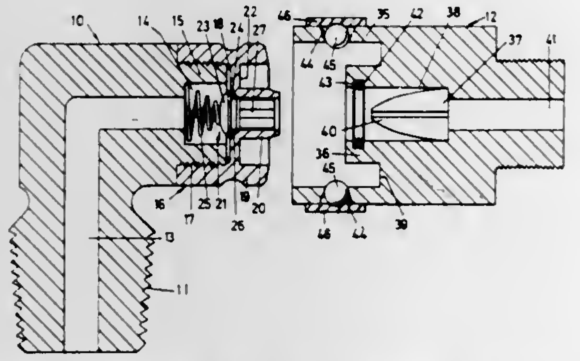
Maciej Stanislaw Skarzynski, 296 Kingston Road, Wimbledon Chase, London, England

Filed Aug. 11, 1971, Ser. No. 170,918

Claims priority, application Great Britain, Aug. 14, 1970, 39,267/70

Int. Cl. F16k *29/00*; F16l *37/28*

U.S. Cl. 251—149.6 **6 Claims**



A readily connectable and disconnectable coupling comprising a first member adapted to be connected to a source of fluid under pressure and a second member adapted to be connected to a fluid consuming or control unit, one of the members having a flow control valve urged towards a seat in the fluid flow passageway by resilient means whilst the other coupling member is provided with a valve actuating member and fluid sealing means, the members being coupled together by abutment members associated with one member each engaging a groove formation in th other member, groove formations being such that initial axial movement followed by a partial rotative movement between the two members causes the sealing means to effect a fluid-tight seal with said passageway and further axial movement followed by a partial rotative movement causes the valve actuating member to engage and open said valve.

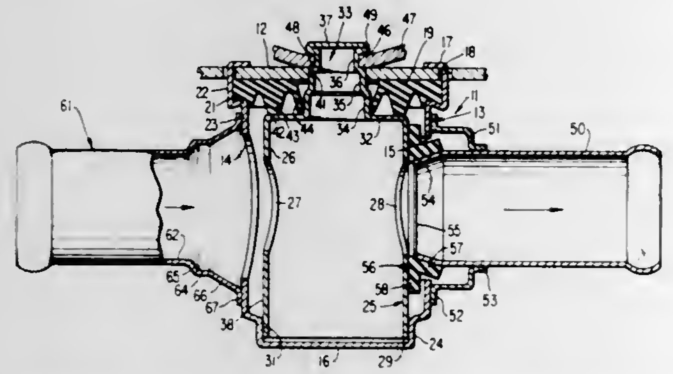
3,704,003
VALVE ASSEMBLY WITH INTEGRAL INLET TUBE AND SADDLE

Robert M. Harter, Collins, N.Y., assignor to AVM Corporation, Jamestown, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,570

Int. Cl. F16k *5/04*

U.S. Cl. 251—312 **1 Claim**



A fabricated plug valve assembly comprises a valve body having lateral inlet and outlet openings and a hollow ported plug rotatably mounted within the body between valve open and closed positions where it respectively blocks or permits fluid flow from the inlet opening to the outlet opening. An outlet tube is secured to the body around the outlet opening with its inner end mounting an annular seal engaging the periphery of the rotatable plug, and a tubular inlet unit having at its inner end an integral saddle section terminating in a flange shaped to conform to the body side contour is rigidly secured to the body around the inlet opening.

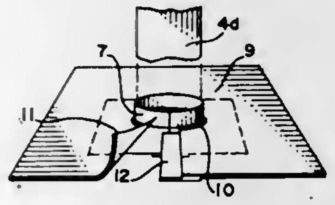
3,704,004
GROUND COLLAR

William J. Carter, Jr., 4700 La Vista Road, Tucker, Ga.

Filed Dec. 16, 1970, Ser. No. 98,703

Int. Cl. E04h *17/00*

U.S. Cl. 256—1 **5 Claims**



For enveloping upright elements such as posts of various cross-sectional configurations at ground level so as to inhibit the growth of vegetation, a collar is formed of flexible, water-resistant sheet material and a main opening is formed therein from which a slit extends to the outer edge of the sheet of material, the slit being for the purpose of facilitating enveloping of a post and the like at ground level. A flange is formed integrally with the sheet and is disposed about the opening formed therein and the opening and flange are configured so as to envelop closely the post or other similar element.

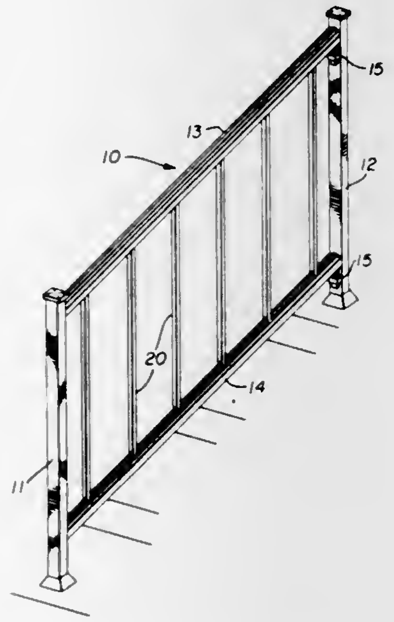
3,704,005
TUBULAR SPINDLE HAVING DEFORMABLE FLATTENED ENDS

Edward J. Kusel, Akron, Ohio, assignor to Questor Corporation, Toledo, Ohio

Filed May 27, 1971, Ser. No. 147,538

Int. Cl. E04h *17/16*

U.S. Cl. 256—22 **3 Claims**



A tube-type spindle for use with ornamental metal railings that is characterized by a unique flattening procedure utilized to make the ends of said tubing readily deformable when associated with the usual parallel top and bottom railings of a metal railing section. This controlled deformability allows the same railing to adjust for slopes required of stair railings. The flattened arrangement includes a first step of crimping on a transverse angle, followed by flattening so as to achieve a laminated structure having a width equal to the width of the tubing.

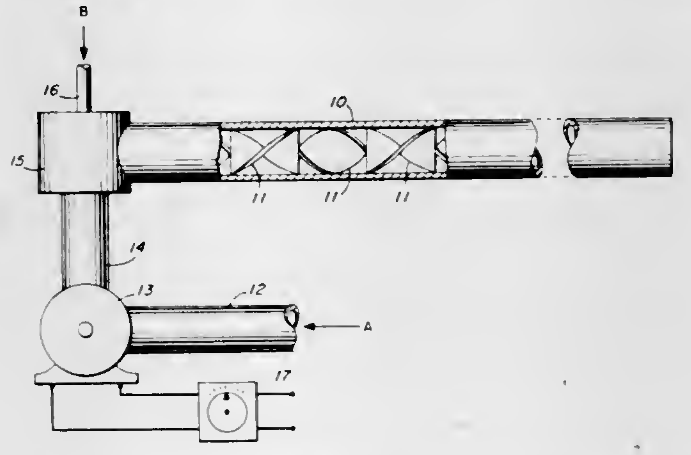
3,704,006
DISPERSION PRODUCING METHOD

Kenneth M. Grout, Topsfield, and Richard D. Devellian, Rockport, both of Mass., assignors to Kenics Corporation, Danvers, Mass.

Filed Jan. 25, 1971, Ser. No. 109,467

Int. Cl. B01f *5/00, 15/02*

U.S. Cl. 259—4 **5 Claims**



A method for producing a dispersion of a dispersed phase in a continuous phase fluid in which the dispersed phase is immiscible. The method is performed in a system which includes a conduit containing a plurality of sheet-like elements extending longitudinally within the conduit. Each element is curved to turn the direction of fluid flowing past it. The elements are arranged in alternating right- and left- handed curvature groups (a group consisting of one or more elements). The two phases are injected into the conduit and pumped through it at predetermined velocity, which together with the density of the continuous phase, the interfacial tension between the phases and the inner diameter of the conduit determines the Weber number. The drop production reaches an equilibrium between break up and coalescence at about twelve elements and is well stabilized at 21 elements. The system and method can be used to extract solvents, remove color from or clarify liquids, remove or add heat, or affect mass transfer rates in reactions. It may completely oxidize a contaminant in an effluent, or for example, by dispersing an oxygen containing gas in water in which is disolved Na_2SO_3. Tests on various hydrocarbons dispersed in water are reported.

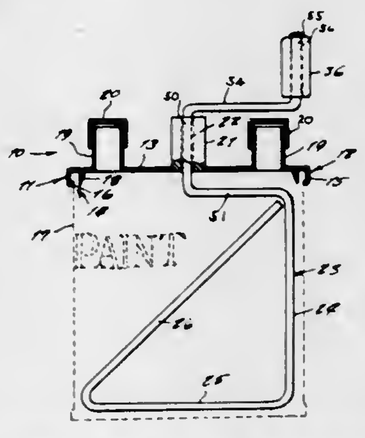
3,704,007
PAINT CAN AGITATOR AND POURING TOP

Paul T. Kroeger, 3111 Willets Road, Philadelphia, Pa.

Filed July 29, 1970, Ser. No. 59,069

Int. Cl. B01f *7/16*

U.S. Cl. 259—122 **10 Claims**



A paint can agitator and pouring top including a removable top having pouring and vent openings diametrically positioned therein and including a central boss to receive a portion of the agitator in rotary engagement therein. The agitator rotates with respect to the top and includes an external crank handle and an internal agitator which is bent to a configuration suitable to mix all of the contents of a paint container.

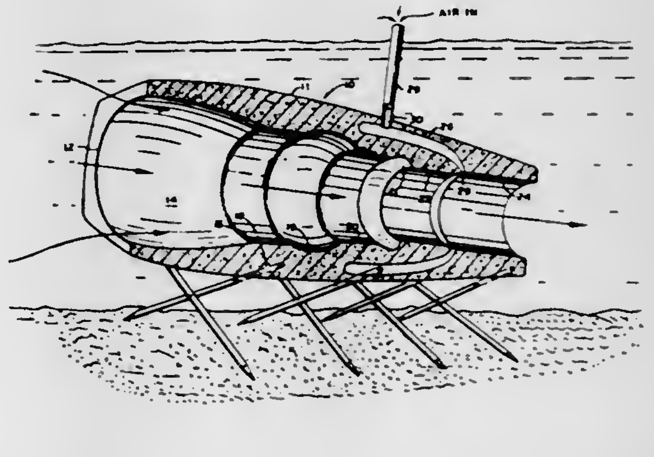
3,704,008
VACUUM PRODUCING MEANS AND METHOD

Charles Thomas Ziegler, 14242 Victory Boulevard, Van Nuys, Calif.

Division of Ser. No. 804,544, March 5, 1969, Pat. No. 3,550,610, which is a continuation-in-part of Ser. No. 698,958, Jan. 18, 1968, abandoned. This application April 13, 1970, Ser. No. 32,480

Int. Cl. B01f *3/04*

U.S. Cl. 261—25 **20 Claims**



A vacuum producing method and means to be submerged and secured below the surface of a body of flowing water and comprising a casing with converging axial passage means forming a waterway, and an annular channel communicating with and supplying air to a restricted portion of said waterway.

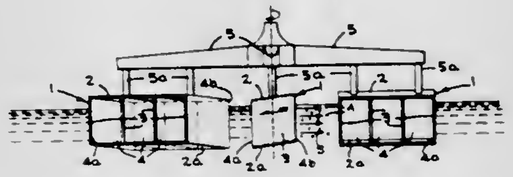
3,704,009
TURBOVENTILATOR FOR THE INPUT OF OXYGEN INTO LIQUIDS

Karl-Heinz Kalbskopf, Oberhausen, Germany, assignor to FMC Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 71,046, Sept. 10, 1970, abandoned. This application May 3, 1971, Ser. No. 139,475

Int. Cl. B01f *3/04*

U.S. Cl. 261—91 **20 Claims**

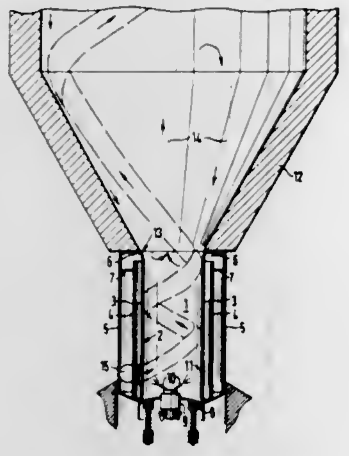


A turbo ventilator for mechanically aerating sewage to activate the sludge during the biological purification is disclosed. A vertical shaft mounts a plurality of circumferentially spaced box-like jet formers which are rotated at the surface of the liquid. These jet formers supply upstanding radially spaced vanes extending between upper and lower enclosure plates to provide short, box-like jet forming tubes. As these jet formers are rotated in the surface layer of the tank, water is taken in a substantially horizontal plane and is accelerated to produce horizontally travelling jets that entrain bubbles of air. These jets are discrete enough and have enough momentum to reach the walls of the tank whereupon they are deflected downwardly to further oxygenate the body of water in the tank. The water is returned to the inlet sides of the jet former tubes from a whirlpool at the center of the tank and makes smooth and nonturbulent transition to a horizontal flow pattern before it re-enters the aerator jet formers.

3,704,010
METHOD AND APPARATUS FOR EXPANDING CLAY GRANULES

Heinz Dennert, Trosdorferweg 6, D-8602 Bischberg, and Hans Veit Dennert, Haus No. 91, D-8602 Schlusselfed, both of Germany

Filed Jan. 28, 1971, Ser. No. 110,551
Claims priority, application Mexico, Jan. 29, 1970, 116946
Int. Cl. F27b *15/10*
U.S. Cl. 263—21 B **6 Claims**

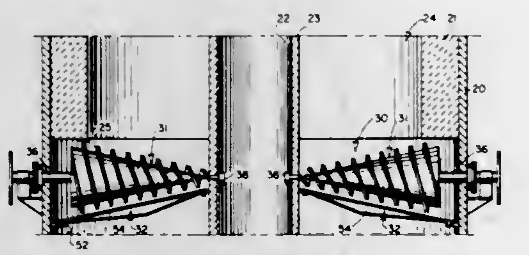


A method and apparatus for expanding clay granules with the steps of producing a hot gas stream in a combustion chamber as an axially streaming, swirling gas stream, introducing the axially streaming, swirling gas stream into a treatment chamber having a narrowing bottom portion as an ascending gas stream which does not fill the entire cross section of the chamber, and introducing a charge of granules into the treatment chamber to be carried along by the ascending gas stream, the granules being permitted to leave the gas stream, fall back under the effect of gravity and recirculate until all of the granules of the charge are completely expanded. The swirling gas stream is tangentially fed into the combustion chamber through slots in the vicinity of the bottom portion thereof, and fuel is atomized into the gas stream by a burner having nozzles and arranged centrally in the combustion chamber at the bottom thereof. The interior of the combustion chamber may be partitioned by two walls, the gas flowing upwardly around one wall and downwardly between the walls before passing into the central area of the combustion chamber.

3,704,011
DISCHARGE MECHANISM FOR SHAFT KILN

John W. Hand; Don L. Lockwood, both of Denver, and Robert K. Harris, Littleton, all of Colo., assignors to Mintech Corporation, Denver, Colo.

Filed Aug. 12, 1971, Ser. No. 171,175
Int. Cl. F27b *1/20*
U.S. Cl. 263—29 **10 Claims**

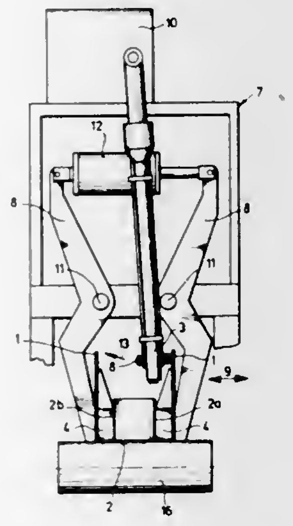


A positive displacement volumetric discharge mechanism of the screw auger conveyor type. A series of radially disposed conical screw type augers and underlying retarder plates substantially close the lower end of an annular chamber of a vertical shaft kiln. The augers are rotated to convey solid materials from a bed of such materials in the kiln chamber radially outwardly to an annular discharge throat. The conical augers are formed so that the volume of material conveyed increases with the radial distance from the center of the kiln in order to maintain a constant and uniform downward flow of solid materials throughout out the cross section of the kiln.

3,704,012
DEVICE FOR POSITIONING A CUTTING TORCH IN A FLAME CUTTING MACHINE

Alfred Pfeuffer, Neu-Isenburg; Gustav Kalkhof, Langen/Hessen, and Helmut Weber, Steinbach/Ts., all of Germany, assignors to Messer Griesheim GmbH, Frankfurt/Main, Germany

Filed Sept. 14, 1970, Ser. No. 72,067
Claims priority, application Germany, Sept. 18, 1969, P 19 47 283.4
Int. Cl. B23k *7/10*
U.S. Cl. 266—23 K **7 Claims**

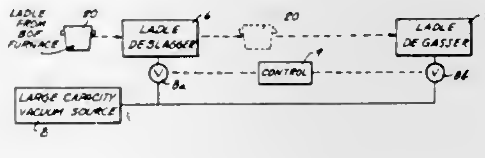


The positioning device comprises an angularly displaceable cutting torch means, stop bars abutting from opposite sides against the workpiece to be separated, and limiting the movement of the torch means. The torch means actuates in its limit positions a torch drive and flame controlling device.

3,704,013
APPARATUS FOR DESLAGGING AND DEGASSING MOLTEN METAL

Thomas E. Perry, Chagrin Falls, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio

Division of Ser. No. 841,026, July 11, 1969, Pat. No. 3,632,096. This application June 25, 1971, Ser. No. 156,960
Int. Cl. C21c *7/00*
U.S. Cl. 266—13 **1 Claim**

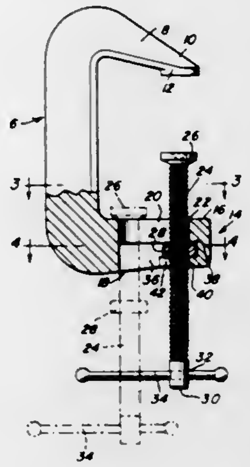


Apparatus for deslagging and degassing molten metal such as steel. Molten steel is prepared in a conventional melting furnace and is tapped into a ladle. A vacuum is applied to the slag on the surface of the steel in the ladle to deslag the steel; the vacuum source may be os such large capacity that it also provides a vacuum environment for a ladle degassing system.

3,704,014
QUICK ADJUSTING C-CLAMP

Robert F. Keene, P.O. Box 58, Cool, Calif.

Filed Feb. 8, 1971, Ser. No. 113,557
Int. Cl. B25b *1/12, 5/10*
U.S. Cl. 269—249 **5 Claims**

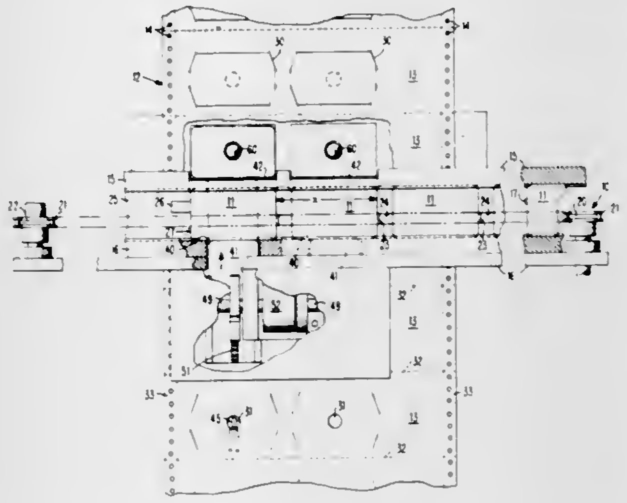


A C-clamp comprising a C-shaped frame embodying a pair of arms having similar ends joined by a bight portion. One of the arms, similar to an ordinary C-clamp, has a terminal anvil constituting a stationary clamping jaw. The other arm has first and second slots to accommodate an elongated screw. This screw has the usual swivelly mounted head on one end adapted to be lined up with and moved toward and from the stationary jaw and it in effect is a movable jaw. A screw mounting and end thrust nut is threaded on the median portion of the screw and is shiftably, adjustably and operatively mounted in one of the slots by way of a nut receiving and keying pocket. A notched wall of the pocket receives and permits the screw to be positioned for adjustment or release for quick manual adjustment of the nut on the screw.

3,704,015
APPARATUS AND METHOD FOR MOUNTING CARDS ON A WEB

Charles Holovka, Jr., Hightstown, N.J.; Bohdan Demchyshyn, Levittown, Pa., and John Francis McHugh, Fords, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed April 5, 1971, Ser. No. 131,196
Int. Cl. B65h *39/00*
U.S. Cl. 270—52 **13 Claims**

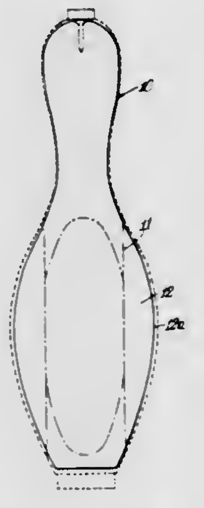


Stiff flexible items, such as plastic credit cards, are inserted within four angled corner slits in respective mailer cards forming part of a burstable continuous form. A ram passes perpendicularly through a circular aperture in each mailer card and forces the credit card against a stationary anvil to bow the central section in a forward direction and concurrently cause the extended ends of the credit card to move rearward into contact with the mailer card to spread the slits. When the ram is retracted, the credit card, due to its inherent resiliency, snaps straight; as it does so, its four corners tuck into the slits around the aperture. Credit cards are mounted one or two to a mailer card automatically as they are advanced intermittently, first transversely of the continuous form to a merge position and then in the same direction as the continuous form to a mounting position.

3,704,016
BOWLING PIN WITH CHEEK ELEMENTS FORMED OF WOOD PARTICLES AND RESIN BINDER

Foster W. Berry, Mushegon, Mich., assignor to Brunswick Corporation

Filed April 24, 1970, Ser. No. 34,924
Int. Cl. A63d *9/00*
U.S. Cl. 273—82 R **4 Claims**

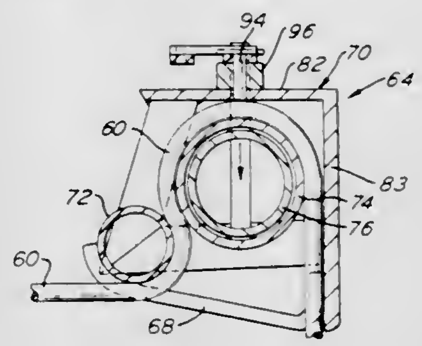


A bowling pin structure wherein the cheek portions of the pin are molded to define controlled density wood fiber and binder resin materials secured about a core. The assembly is machined to define the desired bowling pin body configuration. The cheek material is compressed to provide a preselected density distribution to provide high durability and controlled scorability while maintaining the overall weight approximately that of conventional wood pin materials.

3,704,017
SAFETY DEVICE FOR BACKSTOP ASSEMBLY

James L. Young, Malvern, Pa., assignor to Tubular Products, Inc., Souderton, Pa.

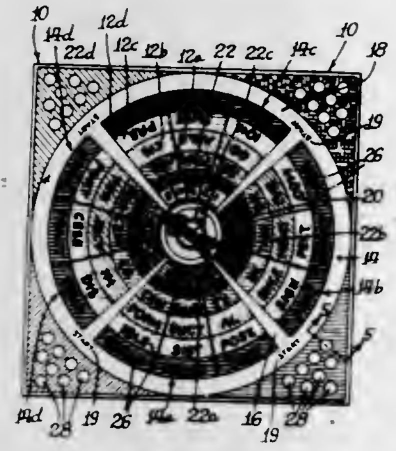
Filed Jan. 21, 1970, Ser. No. 4,647
Int. Cl. A63b *63/04*
U.S. Cl. 273—1.5 R **7 Claims**



A safety device for a folding basketball backstop which can be actuated in hoisting, lowering or storing of the backstop is disclosed. The safety apparatus includes a safety cable which cooperates with a switch actuated solenoid mechanism for substantially immediately preventing further movement of the backstop upon detection of failure of the main hoisting and lowering cable or the structures associated with the main hoisting and lowering cable.

3,704,018
BOARD GAME APPARATUS

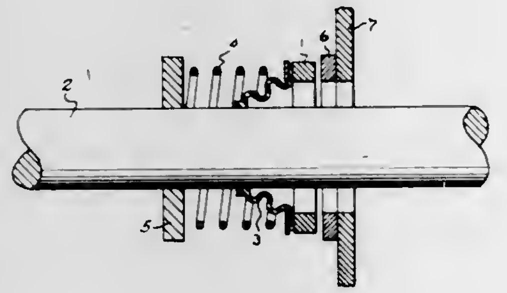
Robert V. Fyanes, 4133 Wagner Avenue, River Forest, Ill.
Filed Dec. 7, 1970, Ser. No. 95,773
Int. Cl. A63f *3/00*
U.S. Cl. 273—134 AB **7 Claims**



A game board for an educational game for use by a plurality of players and having a playing area arranged in a circle which includes, in one case, syllables or multi-letter portions of words, and in another case, letters, which in both cases are put together to form words, and to change or add to words previously made; the board includes a series of concentric circles in which the various syllables or letters are arranged, the circles being of different colors, the board also includes a spinner, in the center and a series of numbers repeated circumferentially, the several series being of colors corresponding with those of the circles; and playing pieces incorporated in the board but capable of being punched therefrom for use in putting on the places indicated by the spinner to form words of the syllables or letters depicted on those places.

3,704,019
SPIRAL GROOVE FACE SEALS

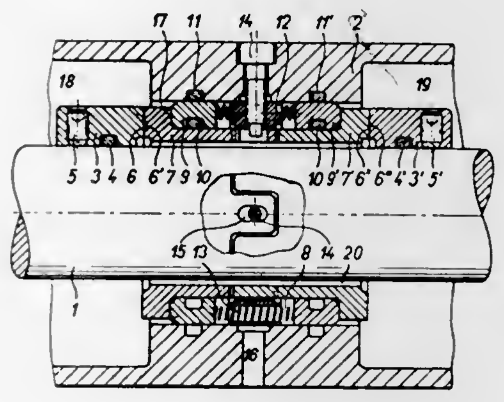
James D. McHugh, San Jose, Calif., assignor to General Electric Company
Filed June 19, 1970, Ser. No. 47,824
Int. Cl. F16j *15/16, 15/40*
U.S. Cl. 277—27 **8 Claims**



A seal for a rotating shaft which extends between areas containing fluids at different pressures. A spring-biased sealing ring rotates with the shaft and is axially biased against a stationary runner having deep, helical grooves thereon. Fluid from the side of the runner with which the grooves communicate is forced beneath the ring and provides a countervailing pressure against the fluid on the other side of the runner.

3,704,020
DOUBLE ACTING ROTARY MECHANICAL SEAL

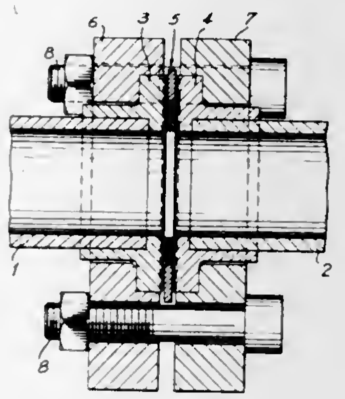
Dieter Karl Wilhelm Huhn, Jarpstigen 20, S-161 40 Bromma, Sweden
Filed Dec. 7, 1970, Ser. No. 95,702
Int. Cl. F16j *15/34*
U.S. Cl. 277—62 **4 Claims**



The disclosure herein describes a seal which prevents the entry of a fluid to be sealed from atmospheric into the seal gland should the pressure of the blocking medium fall below that of the fluid. The seal includes an annular piston which is axially displaceable on the seal's sleeve by the pressure of the fluid of the counterforce if the blocking medium should fail; the displacement of the piston allows the fluid to fill an annular space between the piston and the sleeve and to exert a hydrostatic pressure on the sleeve which balances the pressure of the medium and prevent sealing faces between blocking medium and fluid from separating. At the same time, the pressure on the sealing faces between the blocking medium and the atmosphere is also increased.

3,704,021
SEAL ASSEMBLY

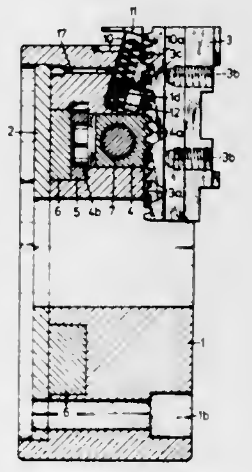
Jean-Francois Barbarin, Ruelle, and Jacques Beaumatin, La Montagne, both of France, assignors to Etat Francais, Paris, France
Filed Oct. 15, 1970, Ser. No. 80,931
Claims priority, application France, Oct. 17, 1969, 6935565
Int. Cl. F16j *15/00, 19/02*
U.S. Cl. 277—180 **7 Claims**



A seal assembly comprises an inner ring of plastic material on which a toroidal elastomer is mounted in tension. An outer ring of plastic material is on the elastomer and a rigid metal ring encircles the outer plastic ring. The outer plastic ring has greater thickness than the inner plastic ring and the metal ring.

3,704,022
CHUCK FOR TURNING MACHINES

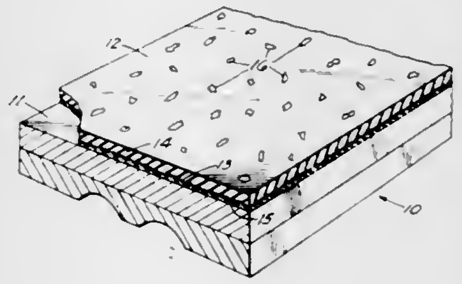
Johann Blattry, Buderich, and Heinrich Beckers, Dulken, both of Germany, assignors to Paul Forkardt Kommanditgesellschaft, Dusseldorf, Germany
Filed May 27, 1971, Ser. No. 147,471
Claims priority, application Germany, May 29, 1970, P 20 26 208.2
Int. Cl. B23b *31/16*
U.S. Cl. 279—121 **11 Claims**



The specification discloses a chuck having radially moveable jaws and driving means for the jaws which disengage from the jaws in outer positions of the jaws. Each jaw has associated therewith a holding member which is engaged with the jaw and moves therewith and prevent the jaws from coming out of the chuck body when disengaged from the driving means. Each holding member is releasable from its jaw by radially inward movement of the jaw and holding member while the jaw is disengaged from the driving means.

3,704,023
SKI WITH CUT-RESISTANT SURFACE COVERING

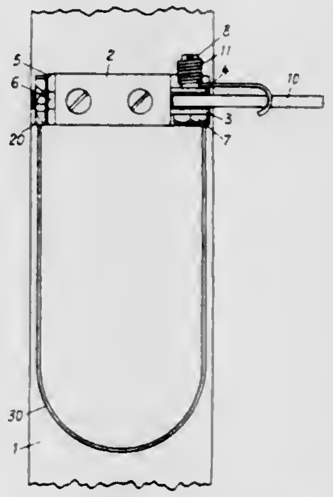
Dan Lloyd Downs, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 2, 1970, Ser. No. 77,649
Int. Cl. A63c *5/12*
U.S. Cl. 280—11.13 L **6 Claims**



Skis and similar structures are provided with a cut-resistant decorative surface layer of urethane resin on a fibrous support. The protective surface layer may be removed and replaced as needed. The ski is protected against marring and scratching and is stabilized against chatter.

3,704,024
BRAKE MECHANISM ATTACHED TO A SKI

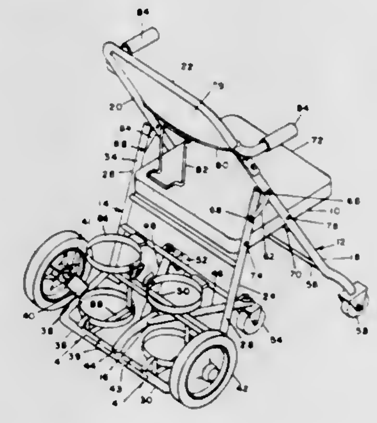
Hans Martin, Volkmarstrasse 6, Zurich, Switzerland
Filed Feb. 8, 1971, Ser. No. 113,211
Claims priority, application Switzerland, Feb. 17, 1970, 2262/70; Jan. 7, 1971, 200/71
Int. Cl. A63c *7/10*
U.S. Cl. 280—11.13 B **14 Claims**



A brake mechanism adapted to be secured to a ski for braking the ski, comprises at least one brake element movable, upon release of the boot from the ski binding, from a position above the running surface of the ski, automatically downwardly into a ski braking position, to thereby engage with the snow for the purpose of exerting a braking force upon the ski. A retaining element actuatable upon inserting the boot into the ski binding retains the braking element in its preparatory braking position, so that upon release of such retaining element the braking element moves from its preparatory braking position into its actual ski braking position. A first locking-pawl arrangement serves to retain the braking element in a locked position for convenient transport and storage of the ski, and a second locking-pawl arrangement serves to retain such braking element in its preparatory braking position, this retaining element cooperating with said first locking-pawl arrangement and said second locking-pawl arrangement such that actuation of said retaining element causes release of the locked position of said braking element and transfer thereof into its preparatory braking position against a spring force effective at said retaining element.

3,704,025
FOLDING CART

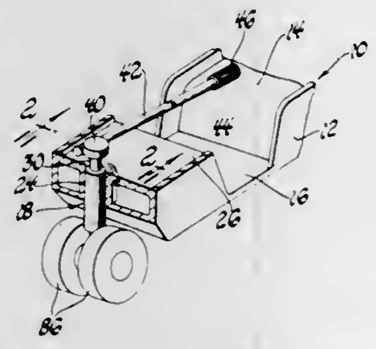
Daniel H. Cerveny, 4886 Noyes, San Diego, Calif.; Perry T. Johnson, 5588 Chelsea Street, La Jolla, Calif., and Donald H. Gaston, 3066 McGraw, San Diego, Calif.
Filed July 23, 1971, Ser. No. 165,532
Int. Cl. B62b *11/00*
U.S. Cl. 280—41 A **6 Claims**



A folding cart that includes a front frame, a rear frame pivotally connected with the front frame, rollers or wheels on both frames, a seat pivotally attached to both frames for supporting an occupant, and a third frame pivotally attached to the rear frame and movable to a forward position to function as a stabilizer for the cart when the front and rear frames are in partly folded position and is movable to an upright position when the front and rear frames are in completely folded position when the cart is being shipped or stored side by side with other like carts.

3,704,026
VEHICLE SUSPENSION MEANS

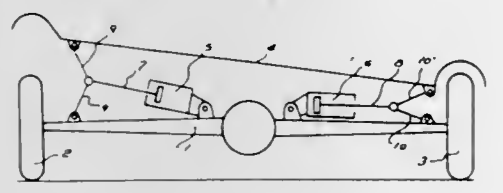
Walton W. Cushman, Fraser, Mich., assignor to Martin Tucker, Trustee, New York, N.Y.
Continuation-in-part of Ser. No. 713,160, March 14, 1968, Pat. No. 3,559,611. This application Jan. 12, 1970, Ser. No. 2,227
Int. Cl. B60g *11/22*
U.S. Cl. 280—87 R **12 Claims**



A vehicle suspension includes an outer tubular housing with a plurality of contoured or tapered surfaces formed internally thereof and an internally disposed shaft also provided with a plurality of contoured or tapered surfaces formed externally thereof; a plurality of elastomeric rings are situated between the internal and external tapered surfaces so as to be engageable therewith; the outer housing is carried by the vehicle body section so as to be movable therewith while the extending end of the shaft is connected to associated vehicular running gear such as ground engaging wheels; as the vehicular load is applied, the inner shaft and externally formed tapered surfaces move axially relative to the outer housing and internally formed tapered surfaces thereby progressively resiliently deforming the elastomeric rings therebetween so as to create a controlled spring rate therethrough; a steering tiller is connected through a worm gear and follower gear to the outer housing so as to enable both rotation of the outer housing and running hear relative to the vehicle as well as relative repositioning of the tiller with respect to the outer housing and running gear.

3,704,027
SUSPENSION SYSTEM FOR MOTOR VEHICLES

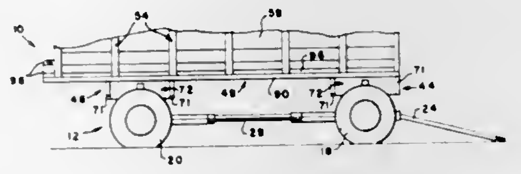
Sanfrancisco Cayetano Roque Laudadio, Sadi Carnot 102, Wilde, Buenos Aires, Argentina
Filed Dec. 9, 1970, Ser. No. 96,437
Claims priority, application Argentina, Jan. 8, 1970, 226.306
Int. Cl. B62d *37/00*
U.S. Cl. 280—87 B **2 Claims**



A motor vehicle suspension system that improves the cornering of the vehicle and reduces the tendency for the vehicle to roll over when rounding sharp curves. Lifting devices are interposed between each of the vehicle wheels and the vehicle body. A device responsive to the vehicular steering system actuates the outboard lifting devices when the vehicle is steered into a curve for combating the centrifugal forces that tend to shift the vehicle center of gravity.

3,704,028
FARM WAGON FRAME

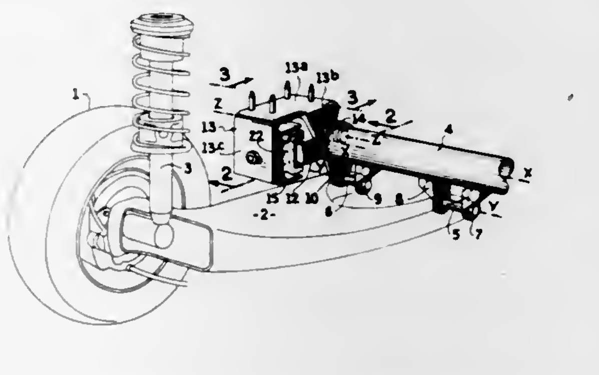
James G. Greiner, Leola, and John E. Breisford, Terre Hill, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.
Filed March 22, 1971, Ser. No. 126,745
Int. Cl. B62d *21/00*
U.S. Cl. 280—106 T **10 Claims**



A farm wagon frame having a high strength to weight ration and including front and rear axle still assemblies interconnected by side rail members. The side rail members are formed in a specific manner to support wagon stakes in such a manner that they do not project beyond the sides of the vehicle and also to support the wagon floor supports in such a manner that the weight on the floor supports is not transmitted in shear to the axle sill assembly.

3,704,029
REAR WHEEL ARRANGEMENT HAVING TRAILING ARMS FOR AN AUTOMOBILE VEHICLE

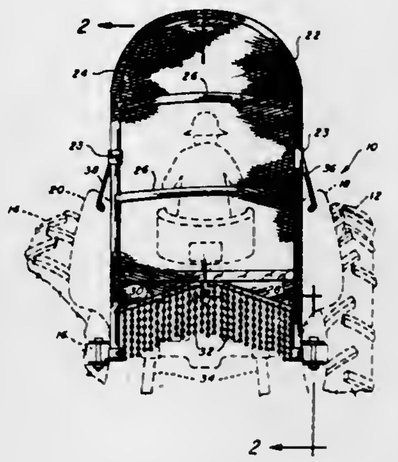
Gilles Bailleux, Sartrouville, France, assignor to Automobiles Peugeot, Paris and Regie Nationale des Usines Renault, Billancourt, both of France
Filed Nov. 4, 1970, Ser. No. 86,702
Claims priority, application France, Feb. 2, 1970, 7003510
Int. Cl. B60g *7/00*
U.S. Cl. 280—124 R **15 Claims**



Rear wheel arrangement for an automobile vehicle having a cross-member to which are pivoted trailing arms carrying the independent wheels of the vehicle. Each end of the cross-member is connected to the suspended part of the vehicle by a resiliently yieldable pivotal device. The latter comprises, on one hand, an elastomer sleeve interposed between coaxial members respectively integral with the suspended part and the cross-member, and, on the other hand, two brackets respectively integral with the cross-member and the suspended part and packing means of resiliently yieldable material interposed between and fixed to the brackets. The packing means is offset with respect to the pivot axis of the pivotal device and adapted to work mainly under shear stress.

3,704,030
PROTECTOR SCREEN FOR TRACTOR DRIVERS

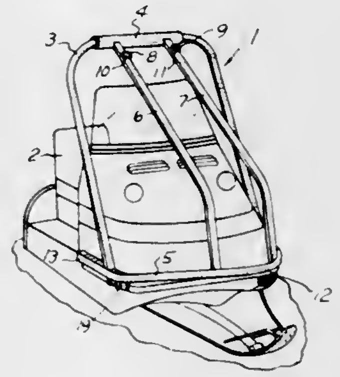
Paul E. McFerron, Route 5, Siloam Springs, Ark.
Filed March 2, 1970, Ser. No. 15,418
Int. Cl. B60r *27/00*
U.S. Cl. 280—150 R **4 Claims**



An upper convex protective screen and frame is mounted upon a tractor chassis or axle and includes in combination therewith a plurality of depending chain members which are adapted to allow movement of rear tractor hitch mechanisms yet provide protection to the lower torso of the tractor driver from debris, rocks, etc. thrown by adjacent tractor mounted mowing devices.

3,704,031
PROTECTION APPARATUS FOR A VEHICLE

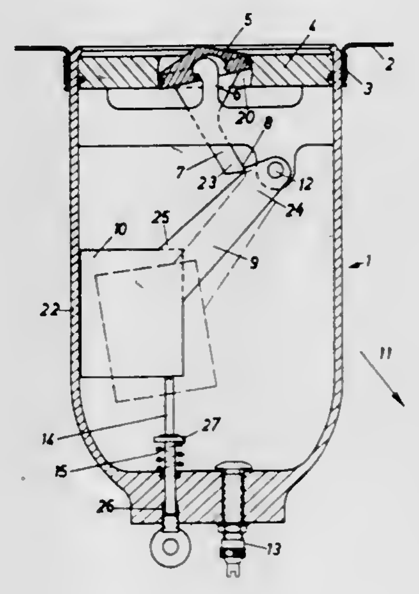
Howard F. Confer, 116 Chesterfield, Bloomfield Hills, Mich.
Filed April 16, 1970, Ser. No. 29,027
Int. Cl. B60r *19/00*
U.S. Cl. 280—150 C **7 Claims**



A combined safety bumper guard and cutter elements for a vehicle, such as a snowmobile. A frame consisting of square cross sectioned structural elements is removably mounted on the snowmobile. The frame includes two U-shaped members whose legs are rigidly affixed to each other, and whose central portions are spanned by two substantially oblique structural members each of which has a hardened steel cutter element mounted thereon for cutting or severing wires or other obstacles encountered by the snowmobile when in motion.

3,704,032
ACTUATING MEANS FOR INFLATING A VEHICULAR CRASH-PAD

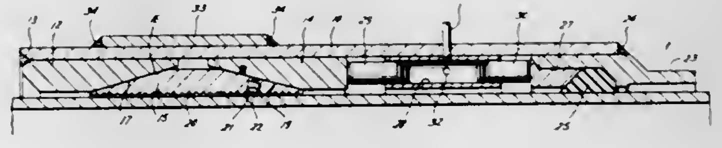
Ernst Fiala, Berlin, Germany, assignor to Wolf-Dieter Klink, Lindbach, Germany
Filed Nov. 5, 1970, Ser. No. 87,203
Claims priority, application Germany, Nov. 6, 1969, P 19 56 505.0
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **13 Claims**



An actuating means for inflating an inflatable crash pad by releasing high pressure from a tank, the crash pad being attached to the tank comprises a means responsive to the speed of the vehicle for releasing the high pressure to fill the inflatable crash pad, the actuating means being located within the tank. An eccentrically connected rotatable release member is provided between the tank and crash pad and is moved from a normally closed position when the vehicle experiences a predetermined amount of deceleration.

3,704,033
CONNECTOR FOR TUBULAR MEMBERS

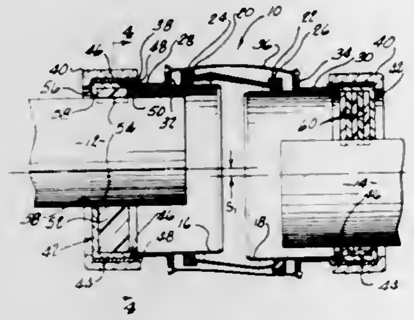
James F. Arnold, Baytown, Tex., assignor to Hydro Tech Services, Inc., Houston, Tex.
Filed Jan. 15, 1971, Ser. No. 106,854
Int. Cl. F16l *35/00*
U.S. Cl. 285—18 **7 Claims**



A housing arranged for positioning over the end of a tubular member carries a tapered slip assembly arranged for actuation into gripping engagement with the tubular member. Longitudinally aligned cylinders are circumferentially spaced about within the housing and a piston slidably positioned in each cylinder is arranged to provide actuation force to the slip assembly in response to an hydraulic pressure.

3,704,034
OFFSET CONNECTOR

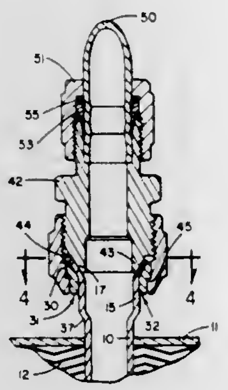
Harold Shire, Los Angeles, and Ira R. Newman, Lakeview Terrace, both of Calif., assignors to General Connectors Corporation, Burbank, Calif.
Filed July 10, 1970, Ser. No. 53,919
Int. Cl. F16l *11/12*
U.S. Cl. 285—47 **18 Claims**



In order to connect pipes which are generally parallel to each other but which are misaligned, offset tubing is connected to the free ends of the misaligned pipes. If the misalignment of the pipes is equal to or less than twice the offsets of the offset connectors, the offset connector can be rotated into at least one axis of alignment so that the misaligned pipes can be connected without stress. If the misalignment of the pipes is greater than twice the offset of the connectors, an intermediate offset connector is connected between the offset connectors to reduce the misalignment and make possible at least one axis of alignment between the pipes. The intermediate offset connector is designed so the misaligned pipes ride on seals inside the connector to permit axial adjustment of the pipes and compensation for thermal expansion of the pipes. In addition, this arrangement provides a limiting pivoting motion of the pipes on the seals for connecting pipes which have some degree of non-axial misalignment.

3,704,035
COUPLING ASSEMBLY FOR REPLACEMENT OF RETURN BEND

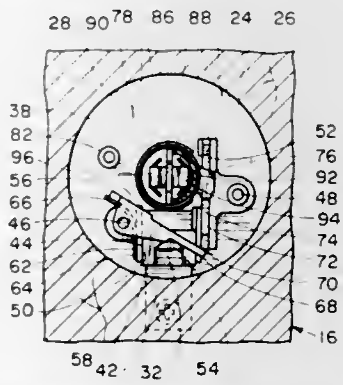
Robert H. Mayer, Bridgeport, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Oct. 19, 1970, Ser. No. 81,972
Int. Cl. F16l *41/00*
U.S. Cl. 285—157 **2 Claims**



The coupling assembly is employed for attaching a return bend to a heat exchanger tube. The tube is formed with an enlarged or expanded end portion spaced close to the tube sheet and terminating in an outwardly flaring bell. A coupling nut is formed with a shouldered bore having a diameter sufficient to permit the nut to be passed over the flaring bell end of the tube and positioned on the tube sheet. The segments of a two-part split sleeve are formed at one end to provide a conical surface comparable to the flaring bell end of the tube. The conical surface is spaced from opposite ends of the sleeve a distance not greater than the spacing between the tube sheet and the expanded end portion of the tube. The sleeve segments are insertable between the tube and the nut when the same is positioned on the tube sheet. The sleeve segments are formed to provide a shoulder engageable by the shoulder in the nut. The nut is threaded on a coupling member fixed on a return bend and surface in conjunction with the split sleeve to draw the coupling member against the flared bell end of the tube.

3,704,036
THUMB LEVER ACTUATED LATCH OPERATING DEVICE

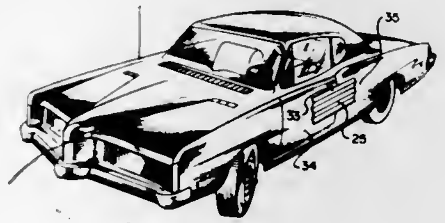
John R. Gerlach, Monterey Park, Calif., assignor to Emhart Corporation, Bloomfield, Conn.
Filed May 5, 1971, Ser. No. 140,341
Int. Cl. E05c *1/16*
U.S. Cl. 292—167 **22 Claims**



A preferably self-lubricating plastic slide frame is secured on the main frame part straddling the pivotal thumb lever inner end and includes a vertical guide track slidably mounting an actuating yoke downwardly engaged over the thumb lever inner end and upwardly abutting and overlying, pivotal actuating lever. The slide frame also includes a vertical guide track slidably mounting a stepped bar-like slide which downwardly abuts the actuating lever and is upwardly stepped engaged with a crank arm of a rotatable spindle assembly, one of the steps of the slide projecting rearwardly through the slot of a cover for additional guiding thereof. An inverted L-shaped leaf spring is engaged with a side of the slide frame and an underside of the actuating lever normally urging the actuating lever pivotally downwardly for "at rest" positioning of the actuating lever, actuating yoke and thumb lever. The spindle assembly includes a hollow cylindrical spindle retainer having alternate sockets therein positioning a half-round spindle in resiliently retained, but removable, alternate positions for properly engaging a latch from either latch side.

3,704,037
ARTICULATED DOOR PROTECTOR

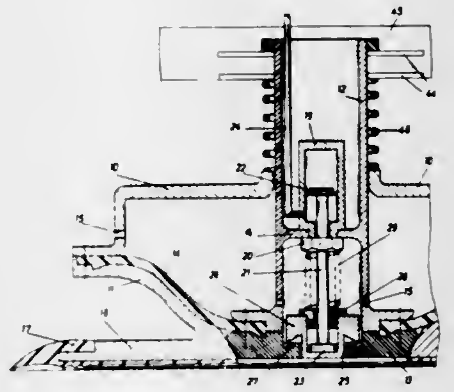
Bernard Glassberg, 1948 Leonard Lane, Merrick, N.Y.
Filed Dec. 14, 1970, Ser. No. 97,623
Int. Cl. B60j *11/00;* **B60r** *19/00;* **B61f** *19/00*
U.S. Cl. 293—1 **12 Claims**



A car door protector has been improvised which is formed of parts that can be rolled together or can be collapsed into a compact package adapted for storage when not in use and which can be attached to the keyhole of the car door and suspended from a string that has an enlargement or tongue on the lower end of which that can that can be inserted through a hole in the uppermost slot or portion of the protection member. This attaching member is effective as a hook for the suspension of the protection member. Another form of hook which is detachably connected to the suspension member and adapted to be fitted between the glass and the frame of the door and which has a depending string and T-shaped tongue. The hook can also be an integral part of the upper slat member and folded therewith into the collapsed slat package. The protective member as provided by opposite plastic sheets having a foam rubber filler disposed therebetween and this combination cut alternately to provide hinge joints of the opposite layers to permit the collapse of the slots in an accordian like manner. A protection member can be made of a series of elongated tubes held together by knotted strings and suspended from a hook connected to the uppermost tube. In another form heat sealed plastic sheets containing ribbed or longitudinally extending pockets of foam rubber particles. A key shaped hook integral with a string which in turn is integral with a plastic sheet made from a single stamping and to which a foam rubber sheet can be adhered is provided.

3,704,038
NEGATIVE PRESSURE LIFT DEVICE

Rudolf Glanemann, Gimbter Weg, Germany, assignor to Paul Eckert, Emsdetten, Germany
Filed July 12, 1971, Ser. No. 161,784
Claims priority, application Germany, July 15, 1970, P 20 35 058.7; Jan. 11, 1971, P 21 00 974.5; March 5, 1971, P 21 10 711.9
Int. Cl. B66c *1/02*
U.S. Cl. 294—65 **14 Claims**

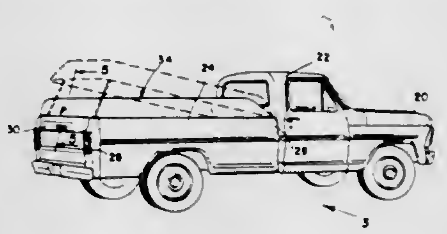


A negative pressure lift device is shown which exhibits a suction cannister consisting of an upper part shaped as a cover and having a center opening to accommodate a piston rod connected to a disk piston, and a funnel-shaped lower part connected thereto, which has a bottom opening to accommodate the disk piston. This device is provided with a sealing membrane affixed, respectively, in the flange-joint between the upper and lower parts and to the disk piston. When the piston rod is lifted a vacuum is created between the membrane, the lower part and the object to be lifted.

3,704,039
TRUCK BED COVER

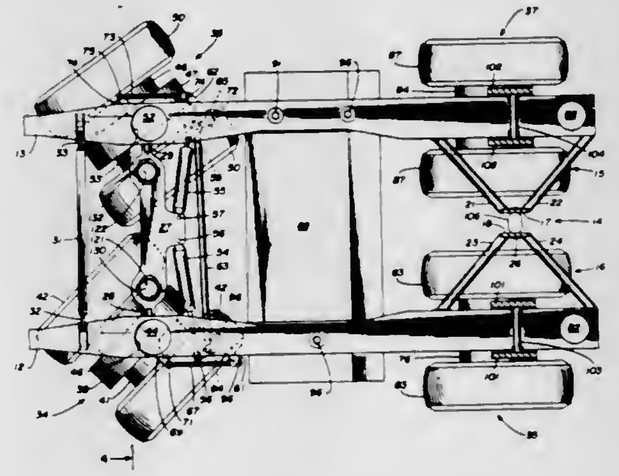
William H. Dean, 1516 E. Griswold, Phoenix, Ariz.
Filed Sept. 14, 1970, Ser. No. 72,052
Int. Cl. B60j *7/10*
U.S. Cl. 296—137 B **14 Claims**

A cover for pickup truck beds, said cover releasably hinged on a horizontal axis to the forward end of a pickup truck bed; and an inverted U-shaped stand pivoted to a rearward portion of said cover and having legs with bearing means slidably operable in tracks secured in generally horizontal disposition at opposite inner sides of said pickup truck bed.



3,704,040
VEHICLE FOR TRAVERSING ROUGH TERRAIN

Leo W. Davis; Marion D. Lackey; John Reuben Ross, and Bryant Trenary, all of Dallas, Tex., assignors to Peerless Mfg. Co., Dallas, Tex.
Division of Ser. No. 67,901, Aug. 28, 1970, abandoned. This application Dec. 6, 1971, Ser. No. 205,111
Int. Cl. B60p *1/04*
U.S. Cl. 298—17 R **12 Claims**



A vehicle for traversing rough terrain, such as is commonly found in open mining operations and highway construction work. The vehicle is characterized by a movable frame structure. The frame includes a pair of elongated side members which are joined in a spaced apart relationship near the rear of the frame members by a first crossmember which is provided with a pivotal joint to permit the side members to rotate or pivot relative to each other. The front ends of the side members are connected by second and third crossmembers, each of which is pivotally connected at both ends to the side members to provide lateral restraint to the side members while the vehicle is traversing rough terrain. The second and third crossmembers are vertically displaced to prevent relative rotation of the side members about their longitudinal axes while permitting up and down movement of the forward ends of the side members as the side members rotate about the pivot point in the first crossmember.

The frame is adapted to support a body, such as a dump box which is pivotally mounted to the side members for pivotal movement about the same axis as the side members. The dump box is maintained in a level position as the vehicle traverses rough terrain by two hydraulic load leveler assemblies which are mounted on the second crossmember and engage the forward end of the dump box. Each side member supports, through suitable suspension means, wheel assemblies at the forward and rearward ends thereof, each of the wheel assemblies being oscillatable about an axis parallel to the path of travel of the vehicle to permit the wheel assemblies to conform to terrain which is inclined relative to the traverse axis of the vehicle.

Power for driving the wheel assemblies and powering auxiliary equipment is derived from an engine module mounted on the side members between the wheel assemblies by mounting assemblies which permit movement of the module upon movement of the side members to minimize stresses in the module upon movement of one side member relative to the other.

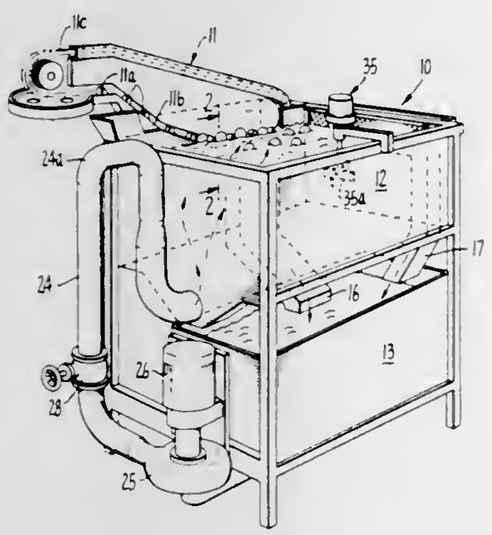
3,704,041
APPARATUS FOR FEEDING CONVEYOR FROM BULK SUPPLY

Malcolm W. Loveland, Orinda, and Robert J. Singleton, Pittsburg, both of Calif., assignors to Atlas Pacific Engineering Company

Filed Dec. 21, 1970, Ser. No. 100,143

Int. Cl. B65g *53/30*

U.S. Cl. 302—14 **9 Claims**



An apparatus for containing a bulk supply of fruit and arranged for feeding fruit one at a time onto a conveyor from the bulk supply using a liquid to support and carry the fruit onto the conveyor and more particularly characterized in the use of a pair of tanks, one tank being employed to support the fruit in liquid and a second tank for storing the liquid displaced by the entry of fruit, said tanks being interconnected by an overflow water passage, a water return having an intake located subjacent to the conveyor, and means for pumping water from the water storage tank back into the fruit containing tank at a point remote from the intake of the water return.

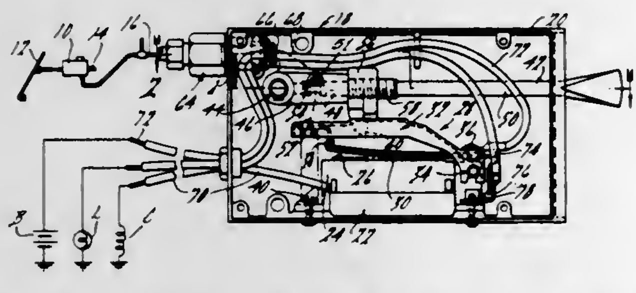
3,704,042
BRAKE CONTROLLER

Edward G. Sturgeon, Orchard Lake, Mich., assignor to Syncro Corporation, Oxford, Mich.

Filed March 2, 1970, Ser. No. 15,773

Int. Cl. B60t *13/70*

U.S. Cl. 303—3 **6 Claims**



A brake controller for an electric brake which is operated by a hydraulic piston from hydraulic fluid from the main brake system and in which the volume of fluid used from the main system to fully actuate the controller is minimized and is at a volume no greater than around .010 cu. in.

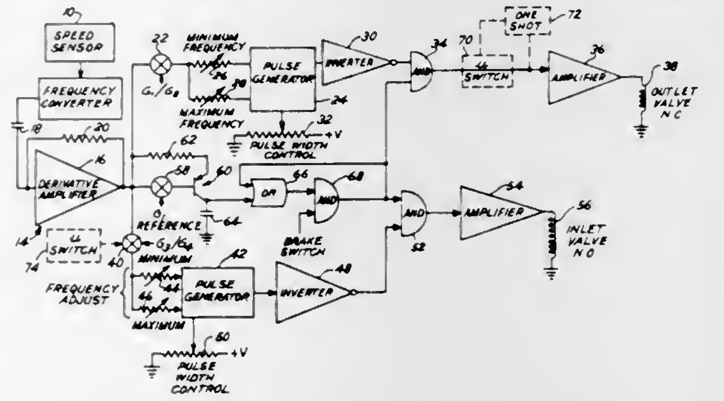
3,704,043
ADAPTIVE BRAKING CONTROL SYSTEM

George B. Hickner; Donald W. Howard, and Paul S. Houseman, all of South Bend, Ind.; Ralph W. Carp, Baltimore, Md., assignors to The Bendix Corporation

Filed Sept. 10, 1970, Ser. No. 70,979

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 BE **7 Claims**



An anti-skid control system for operating inlet and outlet valves of a pressure modulator. The control system uses the rate of change of rotational velocity of the wheels to give an acceleration or deceleration signal. After given acceleration or deceleration rates have been exceeded, the appropriate valve is variably pulsed to give brake pressure build and decay rates that are directly proportioned to wheel acceleration or deceleration. A deceleration responsive switch is used to vary the length of the pressure decay cycle to account for varying coefficients of friction. A delay prevents an initial deceleration rate from operating the valves unless the deceleration rate still exists after a time period.

3,704,044
ACTUATOR ASSEMBLIES FOR HYDRAULIC BRAKING SYSTEMS

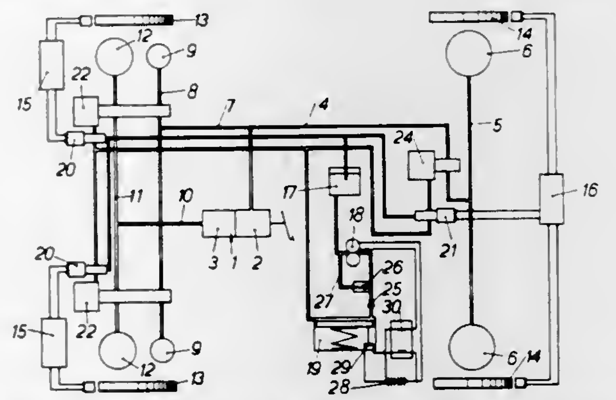
Brian Ingram; David A. Harries, both of Warwickshire, and Lancelot Phoenix, Birmingham, all of England, assignors to Girling Limited, Birmingham, England

Filed Sept. 17, 1970, Ser. No. 73,144

Claims priority, application Great Britain, Sept. 17, 1969, 45,705/69

Int. Cl. B60t *8/06*

U.S. Cl. 303—21 F **10 Claims**



An actuator assembly for a vehicle hydraulic braking system incorporates at least two chambers each having an inlet for connection to a fluid pressure source and an outlet for connection to a wheel brake. The effective volume of each chamber is adapted to be varied between a minimum and a maximum value by movement of an expander piston working in a bore in communication with that chamber.

The expander pistons are normally urged in directions in which the effective volumes of the chambers are at their minimum values, and means are incorporated for moving the expander pistons in opposite directions to increase the effective volumes of the chambers progressively when the deceleration of a wheel controlled by a brake supplied with fluid from at least one of the outlets exceeds a predetermined value.

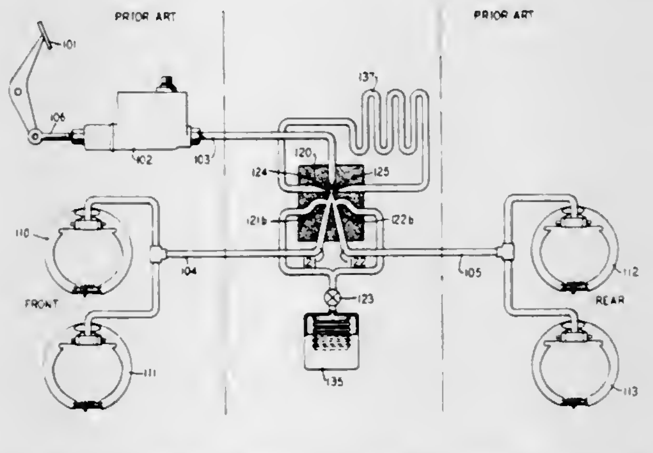
3,704,045
FLUIDICALLY CONTROLLED ANTISKID VEHICLE BRAKE SYSTEM

Edward G. Walsh, Galena, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 14, 1969, Ser. No. 876,824

Int. Cl. B60t *11/10*

U.S. Cl. 303—21 F **1 Claim**



An improved fluid actuated vehicle braking system is disclosed that combines continuous braking action of the vehicle with intermittent braking at the vehicle wheels. Insertion of a fluidic flip-flop between the master cylinder and the wheel cylinders permits alternate application of the front and rear brakes. Depression of the brake pedal results in continuous deceleration of the vehicle since one or the other brake is continuously operated. At the same time, the possibility of the vehicle skidding is minimized by the intermittent braking action at each wheel which prevents "locking" of any wheel.

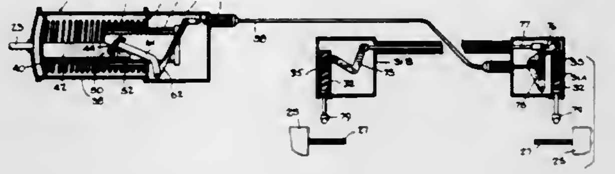
3,704,046
BRAKING MECHANISM

Robert G. Beacon, Sparta, N.J., assignor to Ellcon-National, Inc., Totowa Borough, N.J.

Continuation-in-part of Ser. No. 11,230, Feb. 13, 1970. This application Sept. 25, 1970, Ser. No. 75,447

Int. Cl. B60t *8/22*

U.S. Cl. 303—22 R **8 Claims**



A braking mechanism for a railway car including feeler appratus mounted on each side of a railway car body for indicating movement of the bolster with respect to the truck side frames, load compensating apparatus connected to the brake cylinder pipe for varying pressure of air in the brake cylinder, and equalizer apparatus for receiving vertical movement indications from the feeler apparatus and sending corresponding indications to the load compensating apparatus.

3,704,047
PRESSURE REGULATING VALVE WITH FLOW CONTROL

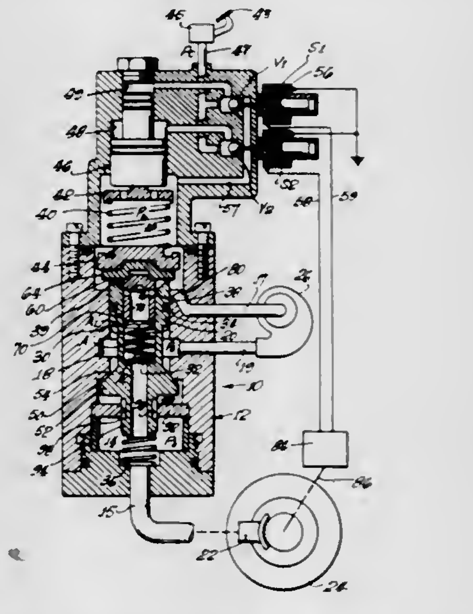
Gordon W. Yarber, 6070 Ramirez Canyon Road, Malibu, Calif.

Filed April 13, 1970, Ser. No. 27,736

Int. Cl. B60t *15/04*

U.S. Cl. 303—54 **8 Claims**

The invention provides more gradual and typically more linear response to an abrupt change of command force in a pressure regulating valve, in which the command force is opposed by a hydrostatic force developed from the output pressure and any lack of balance operates a control valve to supply fluid to or from the outlet to reestablish equilibrium. A flow limiting orifice is inserted between the control valve and the output, and the hydrostatic force is developed in part directly from the pressure at the output and in part from the pressure in the space between the control valve and the orifice. The effective size of the flow limiting orifice is preferably variable in response to the degree of opening of the control valve. The described structure is particularly useful in a pressure regulating valve in an antiskid brake control system.



3,704,048
METAL BEARING INSERT

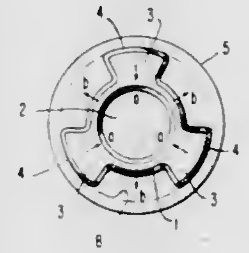
Kengi Yoshikawa, Nagoya, and Etsuo Hayashi, Nishinomiya, both of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Goshi Kaisha Yoshikawa Seimitsu Kohsakusho, Nagoya-shi, Japan, part interest to each

Filed Nov. 10, 1970, Ser. No. 88,430

Claims priority, application Japan, Nov. 10, 1969, 44/89922

Int. Cl. F16c *25/04*

U.S. Cl. 308—72 **1 Claim**



A metal bearing comprises a thin cylindrical portion having a bearing hole formed at the center, a collar formed concentrically around it, and three radial legs coupled to the cylindrical portion and said collar.

3,704,049
JOURNAL LUBRICATOR

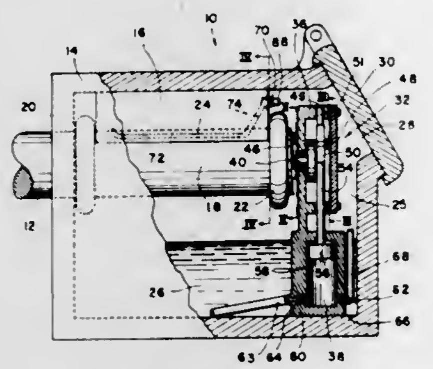
Camillo Guerrini, R. D. 2, Greenville, Pa.

Filed March 26, 1971, Ser. No. 128,268

Int. Cl. B61f *17/24*

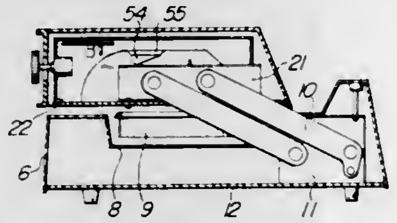
U.S. Cl. 308—84 **2 Claims**

A lubricating device for maintaining a flow of lubricating oil between a journal brass and an axle in a railroad freight car truck. The lubricator includes an eccentric mounted on the axle end and driving a piston type pump to provide a continuous recirculating flow of oil. The journal brass is ported and grooved to provide a flow path for oil along substantially the entire length of the bearing surface.



3,704,050
SOUND REPRODUCTION SYSTEM

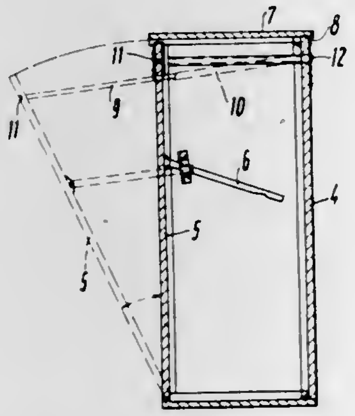
Nobuhiro Nakae, Yokohama, and Toru Nakamura, Tokyo, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed April 2, 1971, Ser. No. 130,629
Claims priority, application Japan, April 17, 1970, 45/37720
Int. Cl. A47b *81/06*
U.S. Cl. 312—7 R **1 Claim**



A sound reproduction system in which a radio receiver is coupled to the top of a record player through a lifting mechanism so that a cover of the record player is eliminated, and in addition, the sound reproduction system is made compact and lightweight as a whole.

3,704,051
CABINET FOR THE HANGING STORAGE OF DRAWINGS, PLANS OR THE LIKE

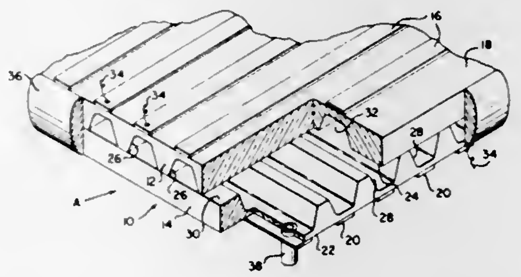
Heinz-Werner Kohler, Meitze, Germany, assignor to Karl Mobus KG Zeichnungs-Ordner, Mellendorf, Germany
Filed Jan. 18, 1971, Ser. No. 107,252
Claims priority, application Germany, Jan. 20, 1970, P 20 02 305.6
Int. Cl. A47b *63/00*
U.S. Cl. 312—184 **4 Claims**



A cabinet for drawings storage has a fall front and support rails mounted between the fall front and the cabinet back. These support rails are pivotally mounted at their ends and additionally supported on fixed discs which bear, about their periphery, support positions at various distances from the axis of rotation of the disc. The support may thus be adjusted by rotation of the disc.

3,704,052
METHOD OF MAKING A PLASMA DISPLAY PANEL

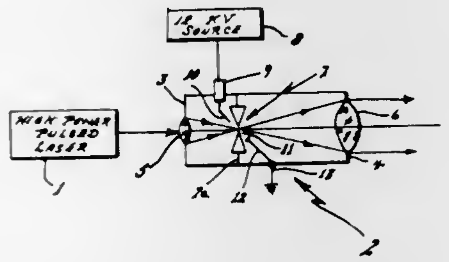
William E. Coleman, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
Division of Ser. No. 823,408, May 9, 1969, abandoned. This application May 3, 1971, Ser. No. 139,750
Int. Cl. H01j *9/00*
U.S. Cl. 316—17 **4 Claims**



A plasma display panel comprising first and second transparent substrates, each having a plurality of spaced parallel conductors on a first surface thereof, and a plurality of spaced, parallel grooves in a second, opposed, surface thereof, with the grooves being aligned with associated conductors on the same substrate. The substrates are assembled with their second surfaces together and with the grooves of the first substrate being positioned at an angle to the grooves of the second substrate so as to form cells at crossover points of the grooves. The grooves of the first and second substrates are made by using the associated conductors as masks to produce self-compensated alignment between conductors and grooves. An electroluminescent material is contained within the grooves.

3,704,053
ELECTROSTATIC SPATIAL FILTER FOR A HIGH POWER LASER

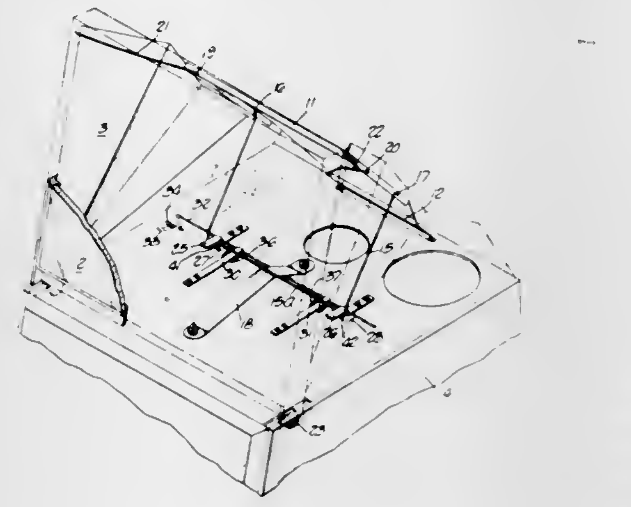
William M. Farmer, Tullahoma, Tenn., assignor to The United States of America as represented by the Secretary of the Air Force
Filed Dec. 10, 1970, Ser. No. 96,819
Int. Cl. G02b *9/00;* **F25b** *21/02*
U.S. Cl. 350—17 **2 Claims**



An electrostatically cooled spatial filter for high powered pulsed lasers wherein the filter comprises a first lens which focuses a laser beam on a pinhole, and a second lens positioned behind the pinhole to receive the beam. To prevent the laser beam from destroying the pinhole an electric field is applied across the pinhole. This field cools the pinhole and as a result the size of the pinhole is preserved.

3,704,054
FOLDING MIRROR AND SCREEN ASSEMBLY

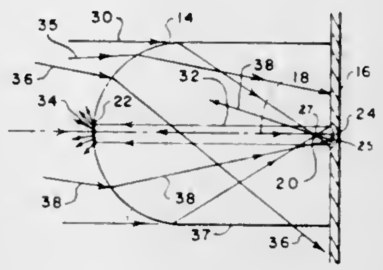
Edward Robak, Orange, Calif., assignor to Technicolor, Inc., Hollywood, Calif.
Filed May 14, 1971, Ser. No. 143,446
Int. Cl. G03b *21/56*
U.S. Cl. 350—123 **14 Claims**



A folding mirror and screen assembly for use with projectors, viewers, or the like is disclosed which includes a mirror unit and screen pivotally mounted on a base means and a support arm pivotally connected to the mirror unit. Latch means are provided on the base means to latch the support arm in upright position when the assembly is in its viewing position. Means are also included to release the latch means so that the assembly may be folded into the closed position.

3,704,055
PROJECTION SCREEN

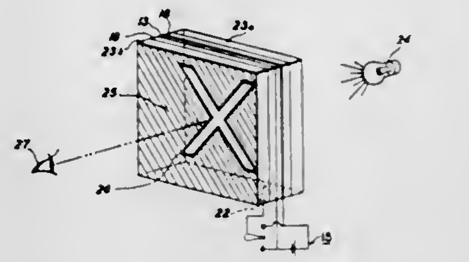
Sung Kul Hong, Box 642, Fort Wayne Bible College, 1025 W. Rudisill Boulevard, Fort Wayne, Ind.
Filed May 28, 1971, Ser. No. 148,036
Int. Cl. G03b *21/60*
U.S. Cl. 350—128 **18 Claims**



Disclosed is a projection screen for displaying optical images projected thereonto by a projector. The screen is formed from a multiplicity of optical cells juxtaposed to define a surface. Each of the cells is provided with a light converging lens having a predetermined radius of curvature and means disposed adjacent to the focal region of the lens for passing the light rays that are converged by the lens along lines passing through the focal region thereof. A mask means is disposed optically behind the lens for selectively absorbing light rays converged by the lens along lines extending through points laterally offset from the focal region of the lens in a direction perpendicular to an optical axis thereof, and a means is optically aligned with the light passing means for dispersing those light rays passed thereby.

3,704,056
IMAGING SYSTEM

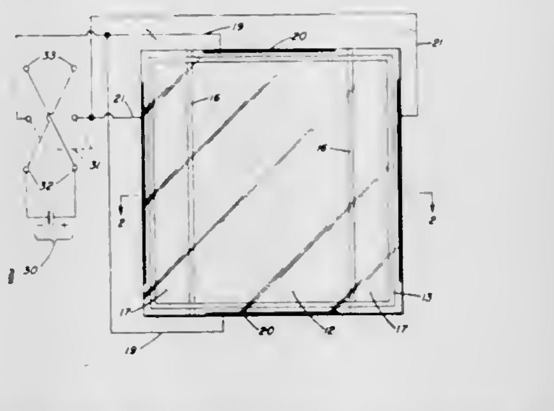
Joseph J. Wysocki, Webster; James E. Adams, Ontario, and Robert W. Madrid, Macedon, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Division of Ser. No. 867,593, Oct. 20, 1969, Pat. No. 3,642,348. This application Aug. 31, 1971, Ser. No. 176,493
Int. Cl. G02f *1/16*
U.S. Cl. 350—150 **20 Claims**



An imaging system which imagewise transforms a cholesteric liquid crystalline material from its Grandjean or "disturbed" texture state to its focal-conic or "undisturbed" texture state by an imagewise applied electrical field whereby a cholesteric liquid crystalline member is imaged in a desired image configuration by the electrical field-induced texture transition system.

3,704,057
ELECTROCHROMIC DEVICE HAVING IDENTICAL DISPLAY AND COUNTER ELECTRODE MATERIALS

Lindley Clair Beegle, Darien, Conn., assignor to American Cyanamid Company, Stamford, Conn.
Filed June 2, 1971, Ser. No. 149,301
Int. Cl. G02f *1/36*
U.S. Cl. 350—160 **6 Claims**

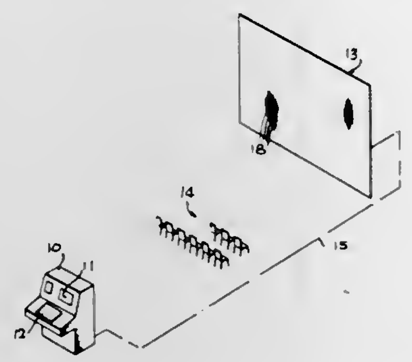


An electro-optical device is provided which is useful in control of visible and infrared absorption by windows, data display devices and the like typically comprising an electrochromic material as the display area, the same type of electrochromic material serving as an electrode for the device.

3,704,058
LIGHT MODULATING DEVICE CONTROLLED BY A DIVERTABLE FLUID STREAM

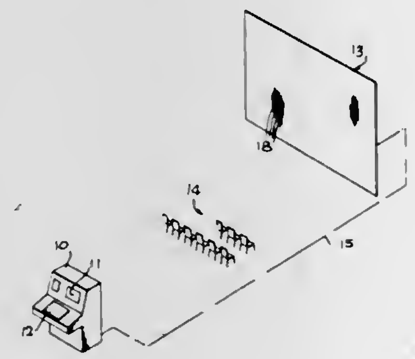
Sidney Bertram, Los Angeles, Calif., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Division of Ser. No. 648,781, June 26, 1967, Pat. No. 3,572,896. This application Oct. 23, 1970, Ser. No. 83,615
Int. Cl. G02f *1/36*
U.S. Cl. 350—160 **6 Claims**

A controllable light reflective device made up of a chamber having at least a portion of its walls transparent to form a window therein with a light reflective structure forming part of or associated with said window. A fluid is placed in the chamber with structure for controllably displacing the fluid to and from a selected portion of the chamber and in optical cooperation with the reflective structure so as to control the amount of incident light which is reflected by the device through the window.



3,704,059
SWITCHABLE LIGHT MODULATING DEVICE

Sidney Bertram, Los Angeles, Calif., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Division of Ser. No. 648,781, June 26, 1967, Pat. No. 3,572,896. This application Oct. 23, 1970, Ser. No. 83,616
Int. Cl. G02f *1/36*
U.S. Cl. 350—160 **7 Claims**

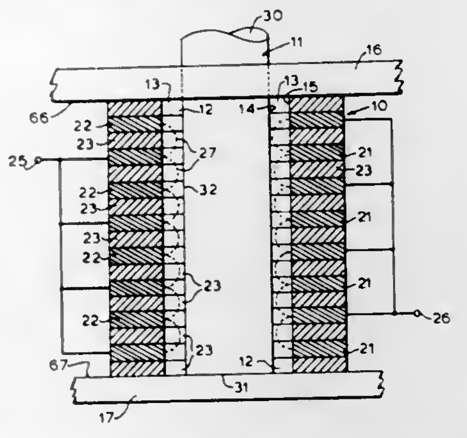


A controllable light reflective device made up of a chamber having at least a portion of its walls transparent to form a window therein with a light reflective structure forming part of or associated with said window. A fluid is placed in the chamber with structure for controllably displacing the fluid to and from a selected portion of the chamber and in optical cooperation with the reflective structure so as to control the amount of incident light which is reflected by the device through the window.

3,704,060
ELECTRICALLY CONTROLLABLE LIGHT CONDUCTING DEVICE

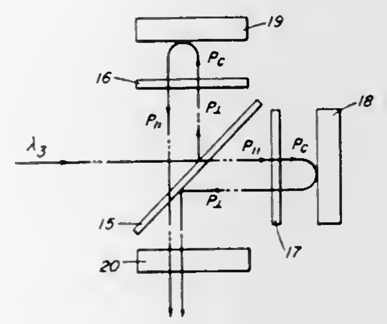
Joseph T. McNaney, 8548 Boulder Drive, La Mesa, Calif.
Filed Aug. 31, 1971, Ser. No. 176,618
Int. Cl. G02f *1/34, 1/36*
U.S. Cl. 350—160 R **3 Claims**

Specified herein is a device which includes the use of a rod, or a filament, of light conducting material clad in a second light conducting material presenting a lower index of refraction than the core material but which is electrically controllable. The rod and cladding are supported in an electrode assembly by means of which the light conducting characteristics of the cladding is changed as a function of an electric field established by the electrode assembly so as to permit or prevent the passage of light through the rod. An information display panel embodiment of the invention is also disclosed utilizing a array of such devices.



3,704,061
WAVELENGTH SELECTIVE MIRROR SYSTEMS

David Neil Travis, 60 Colonial Road, Glenbrook, Conn.
Continuation-in-part of Ser. No. 810,476, March 26, 1969, Pat. No. 3,527,523. This application March 25, 1970, Ser. No. 22,575
Int. Cl. G02b *27/14, 5/28*
U.S. Cl. 350—171 **3 Claims**

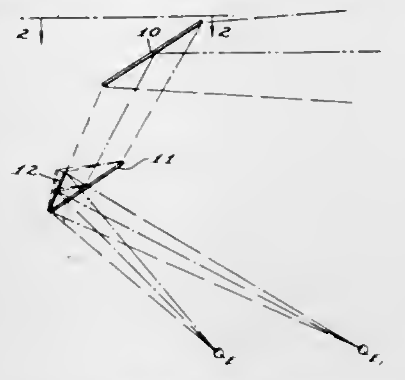


Polychromatic beams are separated into component colors or wavelength bands by wavelength selective filters combined with a beamsplitter. These filters are arranged on three sides of a cubic space, with a beamsplitter on the diagonal. The space may be air or a cube of transparent material, such as glass. If the beam is to be split into more than three colors, a second cube is used with additional beamsplitters. At least one filter which receives a beam split by the beamsplitter, either the filter which receives the transmitted beam or the reflected beam, must be a reflecting filter which reflects the wavelengths that are not transmitted. Preferably such filters are interference filters. Two or three reflecting filters give better energy utilization. The beamsplitters may be chromatic or achromatic. Phase retardation plates compensate to polarization effects. The invention is particularly useful with electrical signal detectors for readouts for coded marks using photoluminescent components forming the code.

3,704,062
REAR VIEW OPTICAL SYSTEM

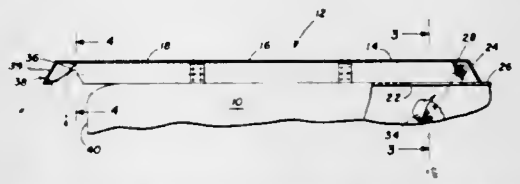
William W. Toy, Bloomfield Hills, Mich., assignor to Lewis G. Harmon, Birmingham, Mich., a part interest
Continuation of Ser. No. 779,922, Nov. 29, 1968, abandoned. This application March 26, 1971, Ser. No. 128,498
Int. Cl. G02b *5/08*
U.S. Cl. 350—301 **12 Claims**

A rear view optical system adaptable to a vehicle having a top wall provided with an opening therein. A first mirror is supported above the opening and is adapted to direct the image downwardly to a one-way or beam splitter mirror which in turn directs the image forwardly to a second mirror. The second mirror in turn redirects the image through the one-way mirror rearwardly to the eyes of the observer in the vehicle.



3,704,063
REARVIEW MIRROR DEVICE

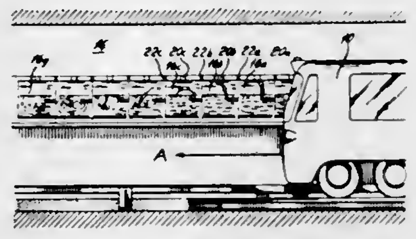
Charles I. Guthrie, 51 Guthrie Street, Irving, Tex.
Filed Jan. 18, 1971, Ser. No. 107,371
Int. Cl. B60r *1/06;* **G02b** *23/02*
U.S. Cl. 350—302 **1 Claim**



A rearview mirror device for panel truck operators enables them to view the "blind spot" behind the truck to prevent accidents and to prevent damage to the rear of the truck when backing up. The device includes a channel running longitudinally along the center of the top exterior of the truck body. An aperture is provided in the operator's compartment of the truck through which a plane mirror is viewable by the operator. The line of sight from the operator extends from the plane mirror rearwardly through the channel to a convex mirror attached to a rear portion of the channel extending beyond the rear of the truck. In the preferred embodiment the convex mirror provides a field of view as wide as the truck which extends backwardly approximately 12 feet from the truck.

3,704,064
DISPLAY SYSTEM FOR MOVING SUBWAY TRAINS

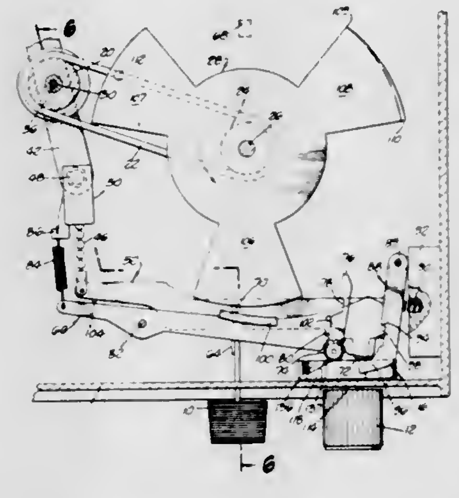
Nicolas Sollogoub, Outremont, Quebec, and Jean A. Bloc, Montreal, Quebec, both of Canada, assignors to Agence Katimavik Inc., Montreal, Quebec, Canada
Filed Oct. 3, 1968, Ser. No. 764,778
Int. Cl. G03b *25/00*
U.S. Cl. 352—100 **1 Claim**



A display system for moving subway trains in which a plurality of consecutive images are mounted on the wall of the subway tunnel and each image is provided with an electronic flash tube and a photoelectric cell. The illumination from the window of the passing train subsequently energizes each photoelectric cell which in turn energizes the flash tube so as to provide a sequence of animated images for a passenger located by the said window.

3,704,065
SINGLE FRAME ADVANCE MECHANISM FOR PICTURE PROJECTORS

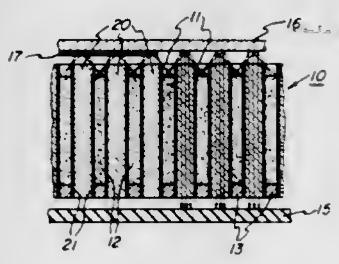
Alex J. Procop, and Ace Boultinghouse, both of Northridge, Calif., assignors to Edutek Systems Corporation
Filed July 2, 1971, Ser. No. 159,432
Int. Cl. G03b *21/38*
U.S. Cl. 352—169 **9 Claims**



A mechanism for motion picture projectors and the like for advancing a strip of film one frame at a time. A brake mechanism is tripped by a pin located upon one of the rotating shutter blades which then permits the brake to engage another of the shutter blades to stop its movement at a position leaving the shutter open. At the same time the mechanism disengages a clutch drive between the shutter and its drive motor so that the shutter is free running just prior to braking.

3,704,066
REFLEX EXPOSURE MEDIUM

Eugene F. Young, Henrietta, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Oct. 20, 1970, Ser. No. 82,282
Int. Cl. G03c *1/92;* **G03b** *27/04*
U.S. Cl. 355—11 **12 Claims**

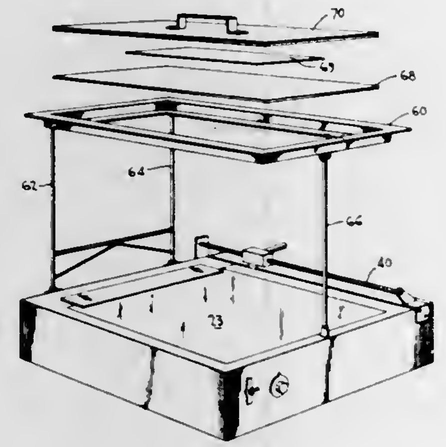


An exposure medium for producing a reflex exposure of an original image onto a photosensitive surface including a transparent conductive member adapted for positioning proximate to the original image to be reproduced. The exposure medium further includes an opaque conductive member spaced from the transparent conductive member and adapted for positioning proximate to the photosensitive surface. A luminescent member is positioned between the transparent conductive member and the opaque conductive member and is adapted when energized to illuminate the original image through the transparent conductive member. A plurality of light conductive members are disposed throughout the opaque conductive member and the luminescent member for conducting patterns of light reflected from the original image through the opaque conductive member and thus exposing the photosensitive surface according to the reflected light patterns. The light conductive members include light insulating means associated therewith and with the luminescent member for preventing the direct illumination of the luminescent member from reaching the photosensitive surface.

3,704,067
VIEW AND CUTTER APPARATUS

William Randol Womack, 2400 Mainway Building, Clovis, N. Mex.

Filed Nov. 17, 1970, Ser. No. 90,319
Int. Cl. G03b *29/00*
U.S. Cl. 355—29 **2 Claims**

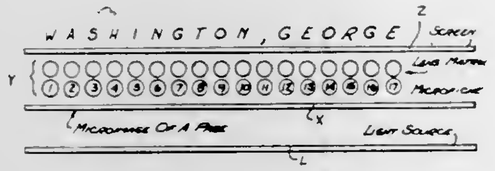


Apparatus is provided for accurately cutting Panorex radiographs on a mounting frame which may be illuminated to aid in the cutting. The apparatus also includes a removable mounting frame so that the Panorex film may be duplicated. A timer is provided to control the illumination for exposure of the duplicating film. The combined apparatus affords an improved means for accurately cutting the film so that the two halves may be reassembled in accurate relationship to view right and left teeth exposures and also for accurately exposing the film to provide duplicate copies of the same.

3,704,068
MICRO-IMAGE RECORDING AND READ-OUT SYSTEM

Adnan Waly, Stamford, Conn., assignor to Personal Communications Inc., Stamford, Conn.

Filed April 21, 1971, Ser. No. 135,996
U.S. Cl. 355—46 **29 Claims**

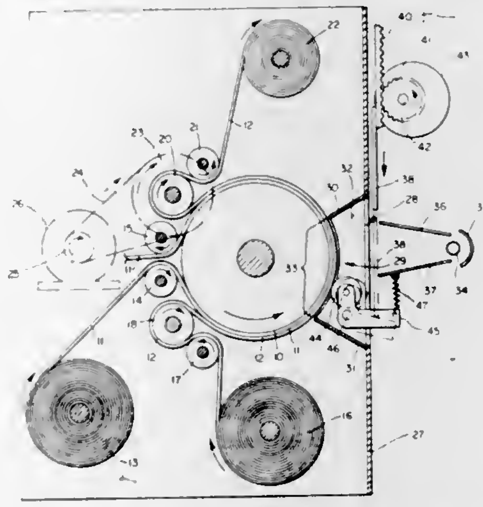


A microimage technique for recording information such as the pages of a book, in a reduced scale on a film surface, and for reproducing the microimages of the pages in an enlarged scale by means of an optical reader whose overall dimensions are comparable to those of an ordinary book. The pages of the book are recorded as multiple microimages on the film surface of a micro-record in an interlaced fashion, whereby the characters constituting each page are interspersed with the characters of the other pages. The reader is provided with a lens matrix constituted by a planar array of lensettes having short focal lengths, each of which is adapted to enlarge a respective individual character in the group of characters forming the text of a microimage representing a single page. The reader includes means to index the multiple-image microrecord relative to the matrix whereby successive microimages are presented on a screen parallel to the matrix. The screen dimensions are comparable to those of an original page. The optical throw or distance between the lens matrix and the screen is extremely short, whereby the depth of the reader may be as small as one inch.

3,704,069
FILM PROCESSING APPARATUS

Paul E. Kitch, Springfield, Mass., assignor to Scott Paper Company, Delaware County, Pa.

Filed April 26, 1971, Ser. No. 137,330
Int. Cl. G03b *27/10*
U.S. Cl. 355—110 **28 Claims**

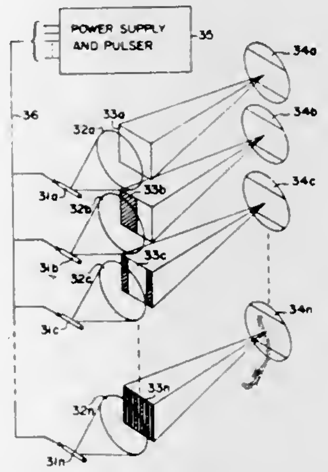


Apparatus for processing or handling film such as in projection systems and the like, and particularly apparatus for the contact duplication of film, in which the shutter movement is film speed responsive, that is, the shutter position is determined by the speed of film movement through the exposure station so that the shutter closes when the speed of film movement drops to a level where heat-damage might commence to the film due to prolonged dwell in the exposure station where it is exposed to heat and light from the projection lamp. The apparatus also automatically dims the projection lamp when the shutter is closed, thereby increasing the life of the lamp. The apparatus further includes a pressure roll for engaging the film to obtain good contact between the films during exposure. The pressure roll is automatically removable from contact with the film when the shutter is closed, so as to facilitate feeding of a new film into the apparatus.

3,704,070
DIRECTION DETERMINING SYSTEM

Philip M. Johnson, Windham; Wilfried G. Dudevoir, and Richard M. Northrup, both of Nashua, all of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed May 24, 1971, Ser. No. 146,392
Int. Cl. G01b *11/26;* **H04b** *9/00*
U.S. Cl. 356—152 **20 Claims**



A system is described in which a plurality of energy sources sequentially project segments of a directional code to a predetermined sector of space. An observer within the sector determines the angle between a reference direction and his line of sight to the system by noting the sequence and timing of the energy pulses he receives as successive segments are projected.

3,704,071
PENCIL HAVING A FORMED ABS POLYMER BARREL

Karl-Heinz Muller, Levekusen; Harry Rohr, Cologne, and Karl-Heinz Ott, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

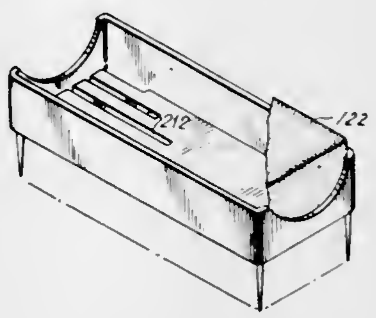
Filed Aug. 28, 1968, Ser. No. 755,812
Claims priority, application Germany, Oct. 4, 1967, P 15 61 767.1
Int. Cl. B43k *19/02;* **B29d** *27/00*
U.S. Cl. 401—96 **6 Claims**

Pencils comprising a lead and a foamed thermoplastic moulding composition sheathed around this lead and having a density of from 0.3 to 0.7 g /cc.

3,704,072
IMPLEMENTS (III)

Jack W. Kaufman, 357 Frankel Blvd., Merrick, L. I., N.Y. Continuation-in-part of Ser. No. 660,477, Aug. 14, 1967, abandoned, and a continuation-in-part of Ser. No. 665,593, Sept. 5, 1967, abandoned. This application Nov. 12, 1969, Ser. No. 875,907. The portion of the term of this patent subsequent to July 11, 1982, has been disclaimed.

Int. Cl. A46b *11/04*
U.S. Cl. 401—291 **11 Claims**

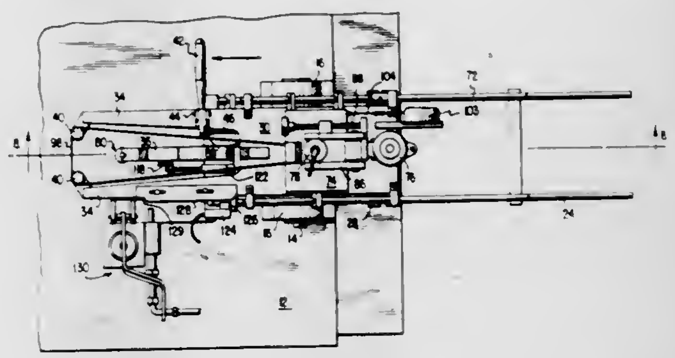


Implements, as for cleansing by scrubbing with the use of a cleansing compound, such as for surgical post or preoperative scrubbing with a germicidal soap comprising, means for providing rubbing type scrubbing action, for example, a pored surface or a plurality of bristle-like elements, such as Velcro or brush bristles and a quantity of compound, for example, a cleansing compound such as a germicidal soap compound associated therewith, for example, by direct coating on the scrubbing means or by being contained within a dispensing type reservoir for application to the scrubbing means, such as being contained within a block of resilient foam-like material or within a flexible walled container whereby pressure on the container or foam block will cause dispensing of the cleansing compound outwardly thereof and onto the scrubbing means, the foam block or container being either permanently associated with the scrubbing means to define a throw-away type implement or the block or container being replaceably associated therewith to enable retention of the scrubbing means with replacement of the container or block, such block or throw-away implement being preferably furnished with protective covering means during transport, storage and prior to usage thereof, such as a peelable or strippable layer of waterproof adhesively secured material or a layer of water-soluble material. The size, shape and density of the brush bristle array permits the implement to function not only as a general personal scrubbing brush, but also as scrubbing apparatus for pre- and post-surgical applications. The implement includes a longitudinally flexible handle which is adapted to hold the dispensing type reservoir and be bent to the contour of the surface being scrubbed.

3,704,073
VEE MACHINING CENTER

John A. Cupler, II, 10 Cupler Drive, Cumberland, Md.

Filed Dec. 7, 1970, Ser. No. 95,678
Int. Cl. B23b *35/00, 47/16*
U.S. Cl. 408—1 **15 Claims**



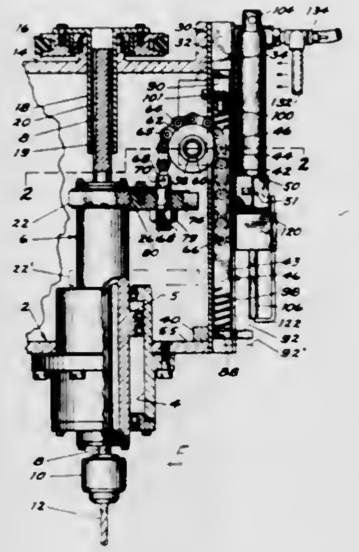
A Vee machining center employing two distinct non-captive tool retaining means which are, each, operable to retain a tool in substantially the same position as a function of the tool releasing movement of the other. One of the retaining means consists of the usual flexible drive belt for rotating the tool while the other comprises a mechanical gripper providing temporary support for the tool during tool interchange.

Two distinct, alternately usable power sources provide two distinct speed control ranges for the machining center.

3,704,074
OFFSET FEED CONTROL

Richard E. Deschner, 5550 Harcross Drive, Los Angeles, Calif.

Filed June 11, 1971, Ser. No. 152,202
Int. Cl. B23b *47/22*
U.S. Cl. 408—11 **14 Claims**



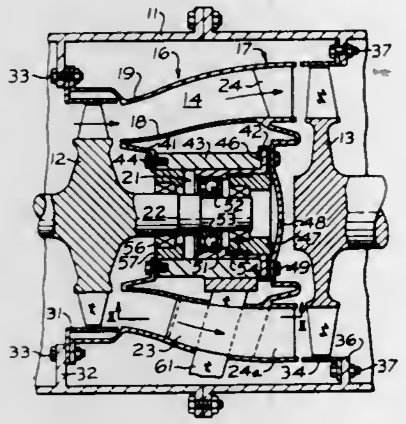
This disclosure describes a hydraulic feed control for reciprocative machines which rotate and feed a tool-bit into a workpiece.

3,704,075
COMBINED TURBINE NOZZLE AND BEARING FRAME

Karl W. Karstensen, Peoria, and Richard W. Kizer, Morton, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 14, 1970, Ser. No. 97,575
Int. Cl. F02c *3/10*
U.S. Cl. 415—68 **4 Claims**

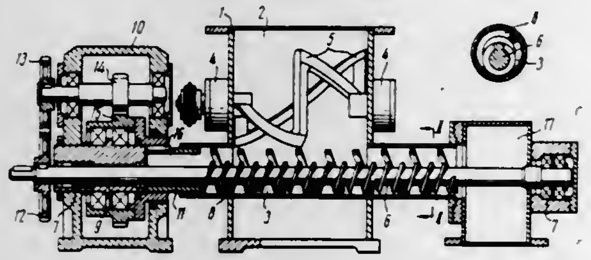
A turbine engine having a gasifier turbine rotor and a power turbine rotor, a bearing frame providing a bearing support for the shaft of the gasifier turbine rotor, the bearing frame and a turbine nozzle being integrally formed to provide a continuous annular passage between the rotors, support struts extending radially across the annular passage within the bearing frame being integrally formed with respective vanes extending radially across the annular passage within the turbine nozzle to simplify construction of the turbine engine and reduce flow disturbance within the annular passage.



3,704,076
SCREW FEEDER FOR PASTE-LIKE MATERIALS

Igor Vasilievich Bodunov; Boris Sergeevich Modestov, and Viktor Vasilievich Ivanchenko, all of Severodonetsk Voroshilovgradskoi oblasti, U.S.S.R., assignors to Severodonetsky Filial Niihimmash, Severodonetsk Voroshilovgradskoi oblasti, U.S.S.R.

Filed Dec. 16, 1970, Ser. No. 98,760
Int. Cl. F01d *5/00*
U.S. Cl. 415—72 **2 Claims**



A screw feeder used for batching paste-like materials, having batching and charging chambers, the batching chamber accommodating a screw conveyor used to displace the material and having a cylindrical spiral eccentrically secured thereto, the turns of the spiral being disposed inbetween the tunrs of the lower portion of the screw conveyor and, in the course of rotation, cleaning the screw conveyor of the material adhered thereto.

3,704,077
THRUST CONTROLLER FOR PROPULSION SYSTEMS WITH COMMONLY DRIVEN, CONTROLLABLE PITCH PROPELLERS

Elwood J. Meyers, Rockford, and Earl J. Falk, Byron, both of Ill., assignors to Barber-Colman Company, Rockford, Ill.

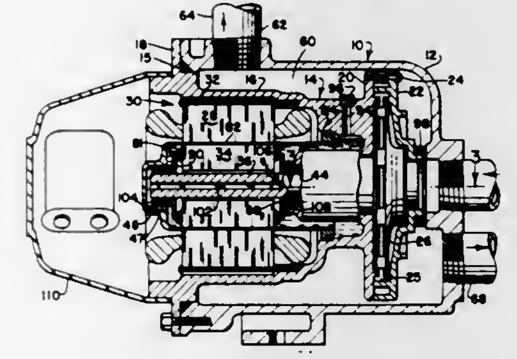
Filed Nov. 3, 1970, Ser. No. 86,452
Int. Cl. B63h *3/10*
U.S. Cl. 416—30 R **12 Claims**

A method and apparatus for controlling the thrust delivered by each propeller of a marine propulsion system of the type having a plurality of controllable pitch propellers driven by a common power source. In response to electrical signals supplied to define commanded thrust levels for the propellers, the power source is controlled to provide the power necessary to satisfy the power requirements of the propulsion system and the propeller pitches are individually set so that each propeller absorbs only its proportionate share of the power. Alternative provision is made for carrying out the foregoing in a speed mode or in a power mode. In the speed mode, the power source is controlled in response to any given set of commanded thrust levels so as to maintain the propellers rotating at a substantially constant speed which is selected to be the higher of a predetermined idle speed for the propulsion system and of the minimum speed necessary to satisfy the highest of the commanded thrust levels. In the power mode, the power source is controlled in response to any given set of commanded thrust levels so as to deliver a substantially constant amount of power which is selected to be the power necessary for the propellers to deliver the amounts of thrust commanded therefrom without their shaft speed dropping below the idle speed. The method and apparatus are also compatible with an operation of the propulsion system in which separate engines are dedicated to the several propellers.

3,704,078
DEEP WELL TYPE PUMP

William J. Conery, and Donald A. Kaessen, both of Ashland, Ohio, assignors to Hydr-O-Matic Pump Company, Hayesville, Ohio

Filed Jan. 22, 1971, Ser. No. 108,806
Int. Cl. F04b *17/00, 35/00, 39/02;* **F01d** *25/24;* **H02k** *5/10*
U.S. Cl. 417—369 **7 Claims**



The motor-pump unit of the invention relates to a self-priming centrifugal pump and electric motor combination wherein the apparatus includes a sealed outer housing means having liquid inlet and a discharge outlet, a pump mounted within the housing means, an electric drive motor positioned within the housing means and including an inner housing for the electric motor. The inner housing is secured to the housing means to form a cooling chamber around the electric motor, and the pump has an outlet connecting to the cooling chamber for circulation of the pumped liquid around the motor housing prior to discharge from the apparatus.

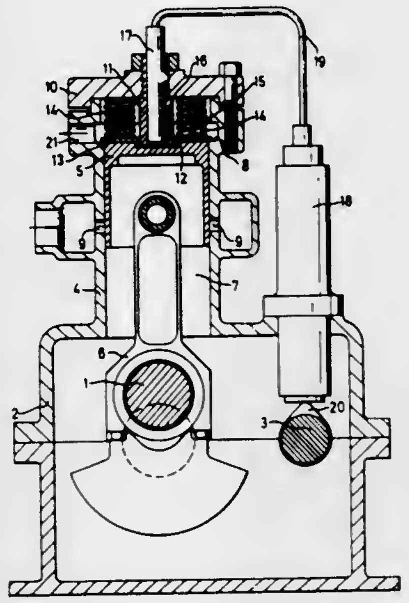
3,704,079
AIR COMPRESSORS

Martin John Berlyn, Beacon Lodge, Texas Street, Morley, Leeds, LS 27 OHG Yorkshire, England

Filed Sept. 8, 1970, Ser. No. 70,072
Int. Cl. F04b *39/06*
U.S. Cl. 417—438 **6 Claims**

An air compressor of the cylinder and reciprocating piston type comprises an inlet port formed in the wall of the cylinder

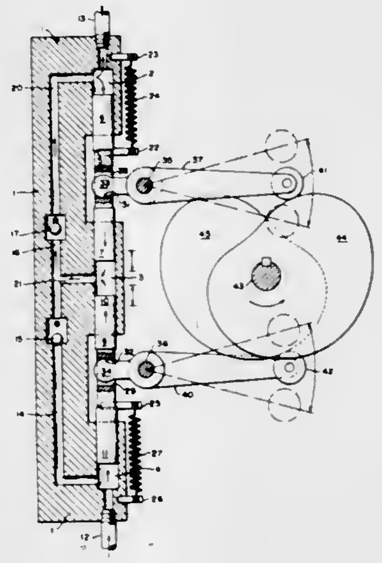
so as to be uncovered by the piston near bottom dead center, and a spring-loaded annular discharge valve co-acting with two concentric seatings to close the upper end of the cylinder but which is engaged and lifted slightly by the piston at top dead center, the inner seating being formed on a valve guide embodying water injector means.



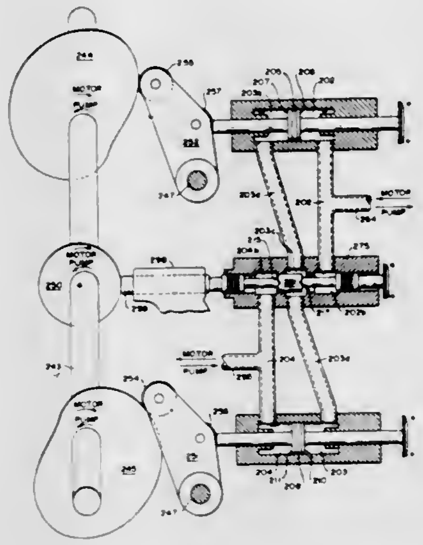
3,704,080
FLUID ENGINE

Grosvenor M. Cross, West Concord, Mass.

Filed July 22, 1970, Ser. No. 57,165
Int. Cl. F04b *19/00, 37/00, 21/02, 39/15*
U.S. Cl. 417—486 **8 Claims**



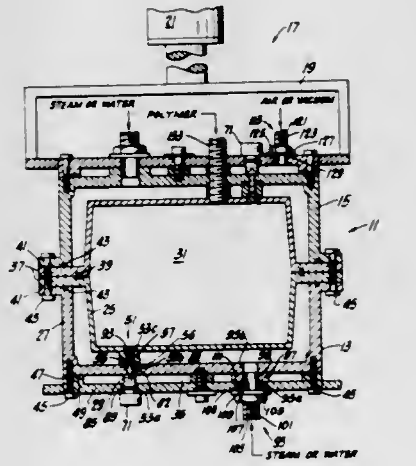
A fluid engine for the transfer of energy between a rotating shaft and a fluid flowing at a constant velocity relative to the angular velocity of the shaft, consisting of a plurality of energy-transfer modules connected hydraulically in series, each module effecting in turn an energy transfer between the fluid and a piston during an active period, the terminal portions of the active periods of adjacently ordered modules being arranged to overlap at a constant velocity.



3,704,081
VACUUM MOLD FOR MAKING FOAMED POLYMERIC ARTICLES

Richard H. Immel, Sewickley, Pa., assignor to Sinclair-Koppers Company

Filed Jan. 21, 1971, Ser. No. 108,273
Int. Cl. B29d *27/04*
U.S. Cl. 425—4 **7 Claims**



A mold for the vacuum molding of foamed cellular thermoplastic articles has two cooperating sections which when placed together define a mold cavity. Each section has three shells and two standard chests including an inner shell, an intermediate shell and an outer shell. The intermediate shell is spaced apart from the inner shell to define a first chest and the outer shell is spaced apart from the intermediate shell to define a second chest. The first chest has inlet and outlet means which are connected to a source of heating and cooling media and the second chest has inlet and outlet means which are connected to atmospheric air, compressed air and vacuum lines. A plurality of venting means communicate between the mold cavity and the second chest whereby a vacuum may be drawn or air may be charged into the mold cavity. At least one section has inlet means for passing expanded or partially expanded granules of a thermoplastic material into the mold cavity after the sections are brought together and a means for opening and closing the mold sections by moving one of the sections relative to the other.

3,704,082

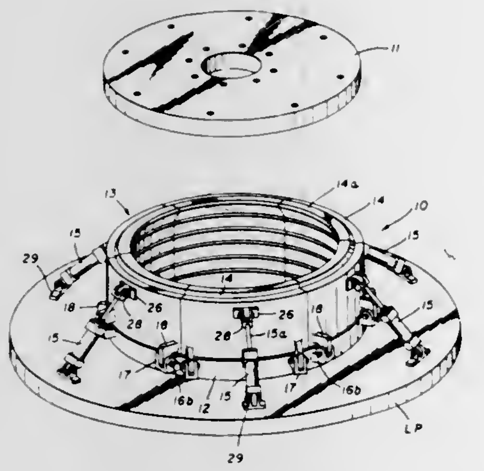
SEGMENTED TIRE MOLD HAVING HINGED ARCUATE TREAD SECTORS

Dwight E. Hottle, 2866 Lakeland Parkway, Cuyahoga Falls, Ohio

Filed Oct. 19, 1970, Ser. No. 81,688

Int. Cl. B29h *5/02*

U.S. Cl. 425—46 **2 Claims**



A three-piece segmented tire mold including opposed sidewall mold sections that are movable toward and away from each other for molding the sidewall portions of a pneumatic tire, and further including a series of arcuate tread mold sectors adapted to register with the opposed sidewall mold sections and with the arcuate tread sectors being hinged to one of said mold sections so as to be movable around a fixed hinge point for the purpose of receiving a tire and subsequently permitting removal of the same following vulcanization.

3,704,083

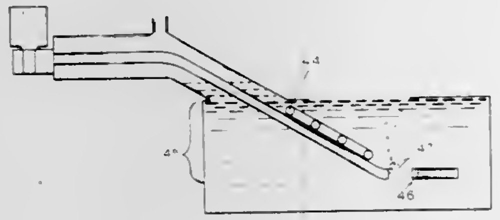
EXTRUSION MACHINE

Arthus L. Phipps, 6204 Raymond Court, Erie, Pa.

Filed June 18, 1970, Ser. No. 47,277

Int. Cl. B29d *7/20*

U.S. Cl. 325—71 **3 Claims**



A method or process for the extraction of a material, especially delicate or fragile materials such as plastic foams or forms, out of a vacuum chamber and removing the material from the chamber into atmospheric pressure without exerting destructive forces on the material other than the gradual application of the atmospheric pressure itself through the use of a liquid medium.

3,704,084

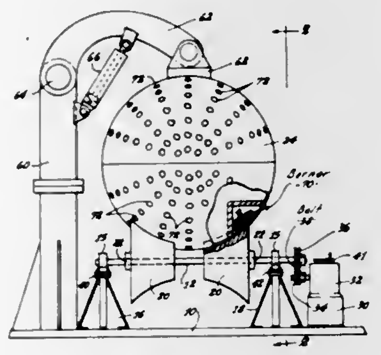
ROTATIONAL MOLDING APPARATUS

Robert A. Clay, 1306 Logan Street, Costa Mesa, Calif.

Filed Nov. 9, 1970, Ser. No. 87,933

Int. Cl. B29c *25/00, 5/04*

U.S. Cl. 425—404 **8 Claims**



A rotational molding apparatus is provided in which a hollow spherical member is supported on rollers, and in which the rollers are controlled to cause the spherical member to turn on an infinite number of axes. One or more molding cavities are supported within the spherical member and which rotate therewith to carry out rotational molding operations.

3,704,085

ARRANGEMENT OF IGNITION ELECTRODES OF ELECTRICALLY IGNITED GAS LIGHTERS

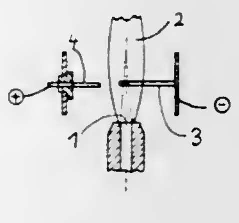
Helmut Pietzonka, Offenbach/Main, and Hans Schindler, Egelsbach, both of Germany, assignors to Braun Aktiengesellschaft, Frankfurt/Main, Germany

Filed Aug. 24, 1970, Ser. No. 66,290

Claims priority, application Germany, Aug. 23, 1969, P 19 43 048.9

Int. Cl. F23q *2/08*

U.S. Cl. 431—264 **13 Claims**



One ignition electrode is arranged above the gas discharging nozzle of the gas lighter and extends into the central zone of the gas jet to function as a gas reflecting member; the other electrode is located outside this central zone.

CHEMICAL

3,704,086

PRODUCTION OF HIGHLY CONCENTRATED, STABLE STOCK SOLUTIONS CONTAINING 1:2 METAL COMPLEX DYES IN A SINGLE STEP REACTION

Dimiter Bayew, 6 Gontardstrasse, 6800 Mannheim, Germany; and Manfred Daeuble, 33 Brunckstrasse, 6710 Frankenthal, Germany; and Otto Kaufmann, 52 Rheinrugenstrasse; Ludsteck Enno, 12 Woehlerstrasse; Dieter Ludsteck, 39 Rheinrugenstrasse; Helmut Pfitzner, 6 Liebermannstrasse; and Heinz-Guenter Witsch, 2 Ungsteiner Strasse, all of 6700 Ludwigshafen, Germany

No Drawing. Continuation-in-part of application Ser. No. 693,162, Dec. 26, 1967. This application June 1, 1970, Ser. No. 42,561

Claims priority, application Germany, Dec. 29, 1966, P 16 19 357.0

Int. Cl. D06p *1/10*

U.S. Cl. 8—42 **5 Claims**

Production of highly concentrated stable stock solutions containing 1:2 metal complex dyes in a single step reaction comprising contacting the corresponding azo dyes in oxygen containing water-miscible solvents with a metallizing agent. The dye solutions are useful for dyeing natural or synthetic polyamides.

3,704,087

ALKYLATING AGENT NEUTRALIZING DIALKYLAMINE FROM DIALKYLAMINOALKYL SULFONE REACTIVE DYE IN CONTINUOUS ACID RESIST PRINTING AND STEAMING

Erich Feess and Sienling Ong, Lorsbach, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Aug. 25, 1971, Ser. No. 174,925

Claims priority, application Germany, Aug. 27, 1970, P 20 42 418.4

Int. Cl. D06p *5/00*

U.S. Cl. 8—66 **5 Claims**

A process for producing resist effects by means of reactive dyestuffs under other reactive dyestuffs on flat-surface textile structures made of natural or regenerated cellulose fibrous materials wherein a printing paste is printed on the textile material in any desired order containing non-volatile organic or inorganic acids or acid salts as reserving agent, colourless organic alkylating agents and reactive dyestuffs which may be fixed according to the two-step cold-dwelling process or the two-step rapid-fixing process for reactive dyestuffs and wherein a further printing paste or padding liquor are applied in overlapping manner which contain alkalis as fixing agents and other reactive dyestuffs which cannot be fixed by the above-mentioned fixing processes or which give only low-yields, and wherein subsequently after drying the material thus treated, fixing of the dyestuffs is carried out by steaming in combination with one of the above-mentioned two-step fixing processes.

The addition of the alkylating agent in the present process binds the dialkylamine set free by the less reactive dyestuffs in the steamer and avoids its reaction with the acid reserving agents and/or the more reactive dyestuffs.

3,704,088

METHOD OF RESTRICTING OXIDATION OF SPONGE IRON

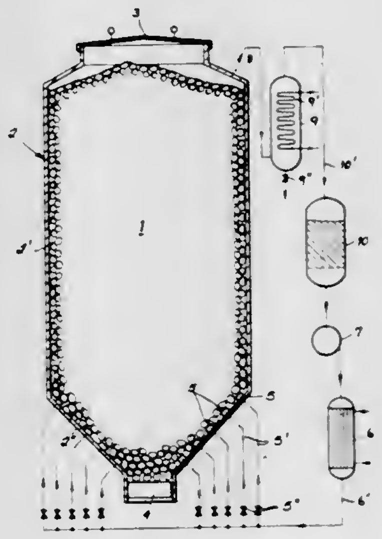
Horst Nagel, Bergen Enkheim, and Wilhelm Thumm and Horst Garbe, Frankfurt, Germany, William H. Dailey, Cleveland, Ohio, and Egon Goedeke, Frankfurt, and Rolf Dadazynski, Rod an der Weil, Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt, Germany, and The Steel Company of Canada Limited, Hamilton, Ontario, Canada

Filed May 22, 1970, Ser. No. 39,630

Claims priority, application Germany, May 29, 1969, P 19 27 300.8

Int. Cl. C23f *15/00*

U.S. Cl. 21—2.5 **4 Claims**



A system for reducing the oxidation of agglomerated sponge iron during storage or transit wherein the mass of iron is stored in an enclosure having a gas-permeable bottom and air, nitrogen-enriched air or nitrogen, treated to remove moisture and acidic constituents, is passed through the mass at a predetermined rate.

3,704,089

PROCESS FOR THE STERILIZATION OF MEDICINAL TISSUE-BINDING SUBSTANCES

Gerhard Stehlik, Leithaprodersdorf, Austria, assignor to Osterreichische Studiengesellschaft fur Atomenergie G.m.b.H., Vienna, Austria

No Drawing. Filed Nov. 12, 1970, Ser. No. 89,117

Claims priority, application Austria, Nov. 17, 1969, 10,742/69

Int. Cl. A61l *13/00*

U.S. Cl. 21—54 R **6 Claims**

In a process for the sterilization of medicinal tissue-binding substances based on monomeric or oligomeric esters of cyano-acrylic acids, the sterilization being carried out by ionizing irradiation, e.g., gamma irradiation, after the esters have been cooled preferably to below their solidification points.

3,704,090

CORROSION INHIBITION USING N-AMINOALKYL PHTHALAMIDES

Robert S. Taylor, Livermore, Calif., assignor to Hexcel Corporation, Dublin, Calif.

No Drawing. Filed Apr. 26, 1971, Ser. No. 137,673

Int. Cl. C23f *11/14*

U.S. Cl. 21—2.7 **5 Claims**

Aromatic dicarboxamide diamines are provided for use as aqueous rust inhibitors or temperature controlled curing or cross-linking agents for polymers having amine reactive functionalities, e.g. epoxy resins and polyisocyanate resins.

3,704,091

EXTRACTION OF BERYLLIUM FROM ORES

James K. Grunig and William B. Davis, Tucson, Ariz., and William C. Aitkenhead, Belize, British Honduras, assignors to The Anaconda Company, New York, N.Y.

Continuation-in-part of application Ser. No. 710,984, Mar. 6, 1968, which is a continuation-in-part of application Ser. No. 316,474, Oct. 15, 1963. This application Dec. 21, 1970, Ser. No. 99,852

Int. Cl. C22b *59/00*

U.S. Cl. 423—128 **11 Claims**

The extraction and the recovery of beryllium substantially devoid of zinc and other impurities from low and medium grade acid-leachable beryllium bearing ores is accomplished by acid-leaching at a pH in the range from about 1.2 to about 2, preferably between 1.3 and 1.5, and advantageously with the aid of a soluble fluoride additive, followed by raising the pH of the leach liquor initially to above 3.0 but below about 4.5 and finally to above 7.5 but below 9.0 to precipitate beryllium hydroxide therefrom. In the initial pH raising step, aluminum is precipitated from the leach solution. After filtration to remove the precipitate, a chelating agent such as EDTA may be added to the filtrate prior to the second pH raising step for the precipitation of beryllium values therefrom. The precipitated beryllium hydroxide is further purified by redissolution and hydrolysis in sodium hydroxide solution. Alternatively, it may be treated with strong and hot concentrated sulfuric acid prior to the precipitation of beryllium values as a hydroxide. The zinc is removed from the final beryllium product by treating the leach liquor with a soluble sulfide after the initial pH raising step or before the hydrolysis of the redissolved beryllium hydroxide.

3,704,092

MANUFACTURE OF NaF/AlF$_3$ DOUBLE SALT

Maurice Clark Harrison and Donald Otis Vancil, Longview, Wash., assignors to Reynolds Metals Company, Richmond, Va.

No Drawing. Filed Aug. 7, 1970, Ser. No. 62,129

Int. Cl. C01f *7/52, 7/50;* **C01d** *3/02*

U.S. Cl. 423—465 **10 Claims**

A sodium fluoride-aluminum fluoride double salt, such as chiolite, of high purity and virtually free from CaO and P_2O_5 contamination, is prepared from impure fluosilicic acid containing these impurities, such as the byproduct from the manufacture of phosphates from phosphate rock, by treating a portion of the fluosilicic acid with a reactive aluminous material to convert it completely to AlF_3, and separating the precipitated CaO, P_2O_5, and silica, reacting a second portion of the fluosilicic acid with sodium hydroxide or sodium carbonate to convert it to NaF and separating the insoluble precipitate of CaO, P_2O_5, and SiO_2; admixing the AlF_3 and NaF solutions at about 140° F.–190° F. while maintaining the pH between about 3.0 and 6.8 to keep SiO_2 in solution, and recovering the precipitated double salt.

3,704,093

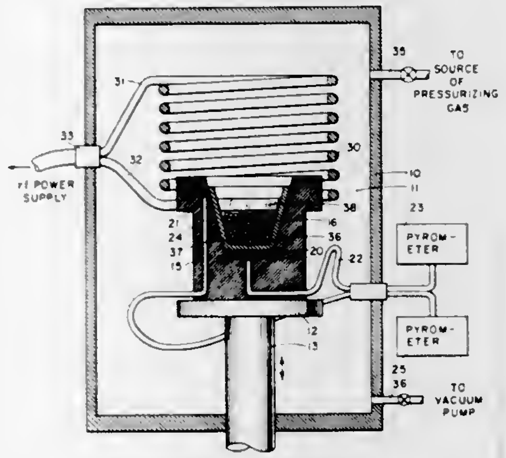
METHOD OF SYNTHESIZING INTERMETALLIC COMPOUNDS

John S. Haggerty, Lincoln, and Joseph F. Wenckus, Needham, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed June 15, 1970, Ser. No. 46,242

Int. Cl. C01g *15/00;* **C01b** *17/00*

U.S. Cl. 423—299 **15 Claims**



Method of forming intermetallic compounds and the like, particularly Group III–V and Group II–VI compounds. The reactants are placed in a crucible and covered with an encapsulant which is caused to flow through and over the reactants to seal the system prior to the time that a temperature is reached when the vapor pressure of one or more of the reactants becomes appreciable. A temperature gradient may be established along the vertical axis of the crucible during the sealing period. When the system is sealed the overpressure is raised and the temperature is increased to a level at which the reaction is completed. Noncondensables such as nitrogen may also be used as reactants.

3,704,094

PROCESS FOR THE PRODUCTION OF ELEMENTAL SILICON

Richard Joseph McClincy, Lewiston, James Herbert Downing, Clarence, and Benjamin John Wilson, Youngstown, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Original application Nov. 19, 1969, Ser. No. 878,229, now Patent No. 3,660,298. Divided and this application Jan. 19, 1972, Ser. No. 219,114

Int. Cl. C01b *33/02*

U.S. Cl. 423—350 **3 Claims**

A low density stoichiometric agglomerated furnace charge for use in the carbothermic reduction of silica in electric type furnaces according to the overall reaction of $SiO_2+2C \rightarrow Si+2CO$. The charge comprises a fine fraction and a coarse fraction of particulated silica homogeneously mixed with a particulated carbon and a low density filler to provide an overall average bulk density of between about 20 and 50 pounds per cubic foot.

3,704,095

TREATMENT OF GASES

Thomas Nicklin, Manchester, England, assignor to The Gas Council, London, England

Filed Feb. 2, 1971, Ser. No. 111,814

Int. Cl. C01b *17/04*

U.S. Cl. 423—242 **8 Claims**

A composition suitable for use in removing sulphur oxides from gas containing sulphur oxides (such as flue gas) is described. The composition essentially comprises (i) an oxide of uranium and/or a precursor therefor, (ii) an oxide of thorium and/or a precursor therefor, and (iii) an alkali metal or alkaline earth metal oxide and/or a precursor therefor. The constituent (iii) is preferably sodium or lithium oxide, and the composition is preferably disposed on a carrier such as α-alumina. The composition may be regenerated after use by exposure to a hydrogen-containing gas.

3,704,096

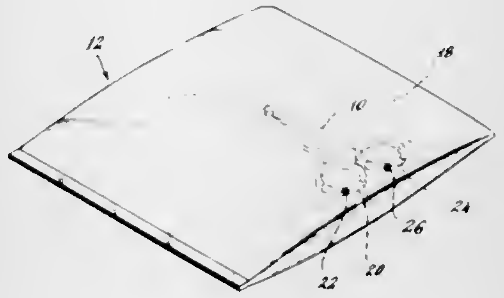
STERILIZING PACKAGE AND METHOD AND MEANS FOR STERILIZING AN ARTICLE AND THEREAFTER CHECKING ITS STERILITY

Christ J. Verses, Fairfield, and Eskil L. Karlson, Stamford, Conn., assignor to Pollution Control Industries, Inc., Stamford, Conn.

Filed Oct. 16, 1970, Ser. No. 81,256

Int. Cl. G01d *21/00;* **G01n** *31/22*

U.S. Cl. 23—230 R **4 Claims**



Means are provided to indicate by color change or lack of color change occurring within a predetermined time interval whether a sterilizing environment has been attained in a sealed container filled with ozone mist. A new package is provided comprising a transparent, sealed container having therein an ozone mist sterilizing environment, an article to be made and kept sterile by said environment, and an indicator adapted to visually signal whether such environment has in fact been attained.

3,704,097

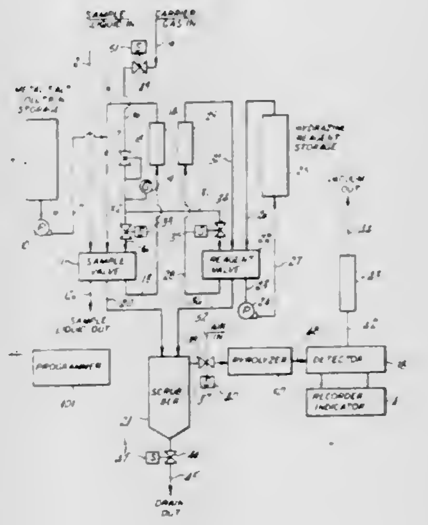
TOTAL MERCURY MONITOR

Italo A. Capuano, Orange, Conn., assignor to Olin Corporation

Continuation-in-part of application Ser. No. 75,927, Sept. 28, 1970. This application Feb. 16, 1971, Ser. No. 115,175

Int. Cl. G01n *21/26, 33/18, 31/10*

U.S. Cl. 23—230 R **10 Claims**



Apparatus and method for analyzing liquid streams for their content of mercury including elemental mercury, ionic mercury and undissociated mercury compounds such as phenyl mercury and methyl mercury. The sample is automatically measured and treated with aqueous hydrazine and a metal salt reagent capable of reacting with hydrazine to form a suitable catalytic colloid. Elementary mercury, formed by the action of hydrazine and the catalytic colloid on the combined mercury, is transferred to a photometric detector and the results are indicated and/or recorded automatically, accurately and rapidly. The apparatus and method are especially useful in the control of mercury contamination in the environment and also for monitoring chemical process streams.

3,704,098

COLORIMETRIC INDICATOR SOLUTION FOR THE DETECTION OF NITROGEN DIOXIDE AND METHOD OF ANALYSIS

Avery B. Smith, Wallingford, Ralph R. Hennig, Cos Cob, Abraham J. Kurtz, Norwalk, and Gregory Pantchenko, Westport, Conn., assignors to Resource Control, Inc.

No Drawing. Filed June 22, 1970, Ser. No. 48,491

Int. Cl. G01n *21/12*

U.S. Cl. 23—232 R **6 Claims**

Soluble tablets suitable for providing an indicator solution of the colorimetric type for quantitatively measuring the nitrogen dioxide contamination in an atmosphere are disclosed. The indicator solution, which has a pH of not more than 4.0, is conveniently prepared by dissolving a tablet containing a diazotizing agent mechanically supported in a suitable manner and a second tablet containing a coupling agent also mechanically supported in a suitable manner in a predetermined amount of water. A measured solution is transferred to an absorption bubbler of the type customarily employed in colorimetric analysis, the reagent solution is exposed to metered quantities of air containing nitrogen dioxide as a contaminant thus resulting in the formation of red-violet diazo dye. On examination of the sample thus exposed in a colorimeter, the nitrogen dioxide content is readily measured.

3,704,099
COAGULOMETER

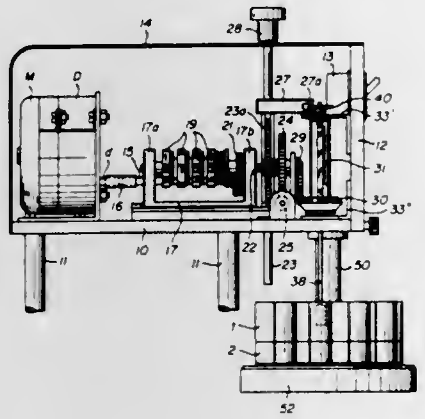
Manuel Claude Sanz, Geneva, Switzerland, assignor to Micromedic Systems, Inc., Philadelphia, Pa.

Filed Mar. 17, 1970, Ser. No. 20,341

Claims priority, application Switzerland, Mar. 19, 1969, 4,124/69

Int. Cl. G01n *11/14, 33/16, 33/26*

U.S. Cl. 23—253 R **11 Claims**



An apparatus for determining the coagulation time of blood and other liquids which has a motor driven rotating stirrer that is mounted for vertical movement on a base below which is mounted a rotatable indexing support member bearing liquid samples. A manually operable rack is used to insert the stirrer in the containers and to start the motor to rotate the stirrer. A slip switch is used to break the circuit when the stirrer encounters resistance caused by the coagulation. The time for coagulation is read directly off a counter attached to the motor.

3,704,100
POLYMERIZATION APPARATUS

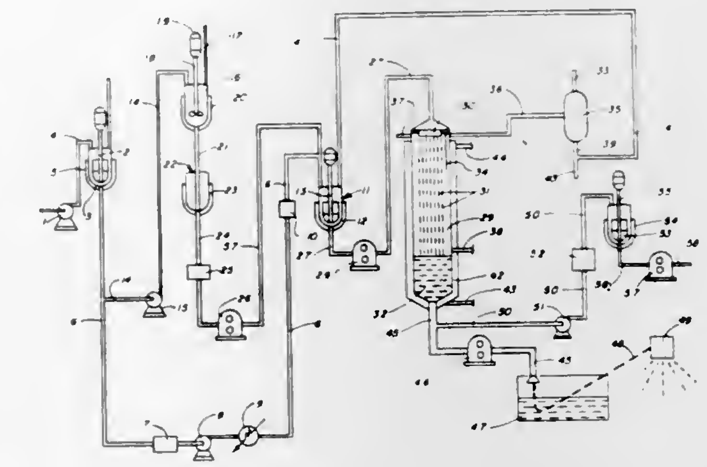
Ian C. Twilley, Chester, and William N. Russell and Weldon H. Peterson, Colonial Heights, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Original application Apr. 15, 1969, Ser. No. 816,286, now Patent No. 3,579,483, dated May 18, 1971. Divided and this application July 6, 1970, Ser. No. 60,978

Int. Cl. C08g *20/14, 20/42*

U.S. Cl. 23—260 **3 Claims**

Apparatus for polymerization of ϵ-caprolactam to produce a polycaproamide polymer more rapidly and with the extent of polymerization far greater than heretofore by utilizing a vacuum demoisturizing column within the polymerization train that upon extrusion of said polymer the volatiles are substantially all removed by an entrainment separator means whereby an improved polycaproamide polymer is obtained.



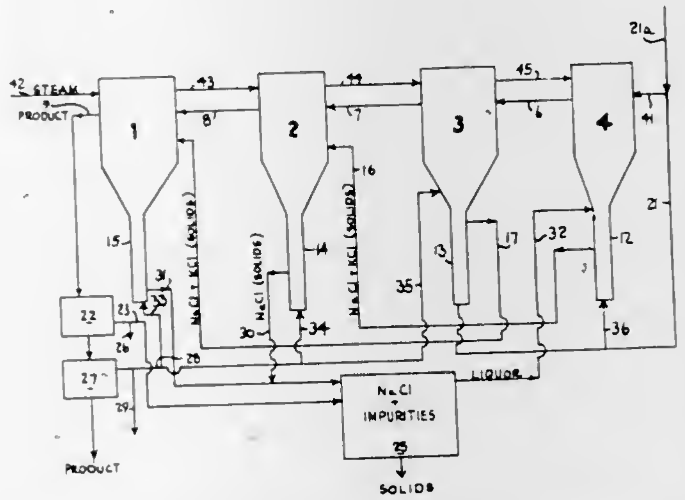
3,704,101
METHOD FOR OPERATING MULTIPLE EFFECT EVAPORATORS

Clifford J. Kelly, Regina, Saskatchewan, Canada, assignor to Kalium Chemicals Limited, Regina, Saskatchewan, Canada

Filed Aug. 25, 1970, Ser. No. 66,779

Int. Cl. B01d *9/00, 3/04*

U.S. Cl. 23—296 **17 Claims**



A method of providing for the recovery of the maximum quantity of a desired salt in a multiple salt solution is shown wherein the solution is subjected to several evaporation steps. Crystallized desired salt from one evaporation step is forwarded to a hotter evaporator where it can be dissolved to further saturate solution therein with the desired salt.

3,704,102
PRODUCTION OF CAUSTIC SODA PRILLS

Edward Merle Allen, Doylestown, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Continuation of abandoned application Ser. No. 757,750, Sept. 5, 1968. This application June 25, 1971, Ser. No. 156,924

Int. Cl. B01j *2/04*

U.S. Cl. 23—302 **8 Claims**

Caustic soda prills are prepared by controllably cooling molten caustic soda droplets to a temperature below 260° C. but above about 122° C. with a moisture bearing gaseous coolant. Further cooling is then conducted in the absence of water vapor, e.g., by cooling in a moisture free gaseous environment.

3,704,103
METHOD OF PREPARING SINGLE CRYSTALS OF MERCUROUS CHLORIDE

Cestmir Barta, Prague, Czechoslovakia, assignor to Ceskoslovenska Akademie Ved, Prague, Czechoslovakia

No Drawing. Filed Jan. 20, 1970, Ser. No. 4,417

Int. Cl. C01g *13/04*

U.S. Cl. 23—305 **5 Claims**

Method of preparing single crystals of mercurous halides, which comprises separating the respective mercurous halide from the ambient atmosphere, heating the system to a temperature of at least 120° centigrade, and cooling to the respective crystallization temperature after a pressure of at least 0.015 torr in the system has been reached.

3,704,104
PROCESS FOR THE PRODUCTION OF TRICHLOROSILANE

Mohendra S. Bawa and Donald O. Thur, Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed June 1, 1970, Ser. No. 42,356

Int. Cl. C01b *33/04*

U.S. Cl. 423—342 **6 Claims**

In the production of trichlorosilane (TCS) from the reaction of elemental silicon with hydrogen chloride, substantially improved yields are obtained by separating dichlorosilane (DCS) and silicon tetrachloride (TET) from the product mixture and recycling these by-products to the reaction zone. In the preferred embodiment, it is essential to maintain the molar ratio of recycled silicon tetrachloride to recycled dichlorosilane no greater than 1.0. Also, the following conditions are preferably maintained in the reaction zone: (1) a short residence time, (2) a low partial pressure of HCl, and (3) a relatively low temperature.

3,704,105
PROCESS FOR PREPARING OVERBASED BARIUM SULFONATES AND THEIR USE IN DIESEL FUELS

Warren L. Perilstein, Orchard Lake, Mich., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Sept. 16, 1968, Ser. No. 762,371

Int. Cl. C10l *1/32*

U.S. Cl. 44—51 **9 Claims**

A process for preparing overbased barium olefin derived sulfonates is described. Their use as smoke reducing additives in distillate fuels is also disclosed.

3,704,106
COLORED PETROLEUM DISTILLATE

Richard B. Orelup, Paterson, N.J., assignor to Morton International, Inc., Chicago, Ill.

No Drawing. Original application Oct. 24, 1967, Ser. No. 677,733. Divided and this application Mar. 23, 1970, Ser. No. 22,066

Int. Cl. C10l *1/22*

U.S. Cl. 44—59 **4 Claims**

A petroleum distillate is imparted with a distinct colorization by a liquid azo dye composition soluble in the distillate. The liquid azo dye composition is characterized in that it

(a) has a color value which is at least about forty percent of the color value of a comparable solid dye;

(b) exhibits permanently homogeneous liquidity;

(c) is capable of complete and substantially instantaneous solubility in petroleum distillates; and

(d) essentially consists of between about 50–75% by weight of a mixture of azo dyes containing C_5–C_{12} alkyl beta-naphthols or p-C_5–C_{12} alkyl phenol in the dye molecule and about between 50–25% by weight of a liquid organic viscosity depressant compatible with the azo dyes.

3,704,107
FUEL COMPOSITION

Raymond C. Schlicht, Fishkill, and George W. Eckert and Ronald W. Von Allmen, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Dec. 7, 1970, Ser. No. 95,938

Int. Cl. C10l *1/18, 1/26*

U.S. Cl. 44—58 **10 Claims**

Turbine, diesel and motor fuel composition comprising a hydrocarbon or a mixture of hydrocarbons in the middle distillate or kerosene and gasoline boiling ranges containing a bis-(hydroxyethyl) alkane phosphonate in an amount effective to provide a fuel having a high level of anti-wear, anti-icing and rust-inhibiting properties and a method for operating a turbine or diesel engine.

3,704,108
HYDROCONVERSION OF WASTE NATURAL AND SYNTHETIC RUBBERS

Seymour B. Alpert, Princeton, N.J., assignor to Hydrocarbon Research, Inc., New York, N.Y.

Filed Sept. 25, 1970, Ser. No. 75,592

Int. Cl. C10l *1/16*

U.S. Cl. 44—62 **25 Claims**

Waste natural and synthetic rubbers are converted in the presence of a catalyst and in a hydrogen environment by passing a particulate rubber slurry and hydrogen upwardly through a reactor maintained under temperatures in the 700 to 850° F. range and pressures in the 500 to 3000 p.s.i.g. range. The particulate rubber is converted in the reactor to hydrocarbon liquids while unconvertible solids originally compounded with the rubber leave unchanged in the product. The hydrocarbon stream can have a wide range of properties depending on the objectives of the user of the process.

3,704,109
MOTOR FUEL COMPOSITION

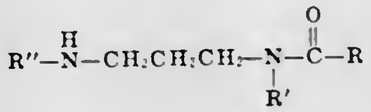
Stanley R. Newman, Fishkill, Ronald W. Von Allmen, Hopewell Junction, and Kenneth L. Dille and Herbert E. Vermillion, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Dec. 20, 1968, Ser. No. 785,774

Int. Cl. C10l *1/26*

U.S. Cl. 44—66 **6 Claims**

Motor fuel composition comprising a mixture of hydrocarbons in the gasoline boiling in the gasoline boiling range containing (1) the salt reaction product of (A) a paraffinic oil oxidate having a neutralization number between 55 and 80 and a saponification number between 100 and 200, and (B) an amide having the formula



$$R''-\overset{H}{N}-CH_2CH_2CH_2-\underset{R'}{N}-\overset{O}{\overset{\|}{C}}-R$$

in which R is a monounsaturated hydrocarbyl radical having from 16 to 18 carbon atoms and R′ and R″ alternately represent hydrogen and a hydrocarbyl radical having 14 to 18 carbon atoms, and (2) a normally liquid amine salt of branched chain primary alkyl acid esters of orthophosphoric acid in which each esterifying group contains 13 to 16 carbon atoms and the amine is an aliphatic hydrocarbon monoamine of 6 to 24 carbon atoms in which each aliphatic hydrocarbon radical is attached to the nitrogen through a saturated carbon atom.

3,704,110

ELECTRICALLY CONDUCTIVE SURFACE

John B. Finn, 6116 Applegate 43615, and Carl J. Hudecek, 2414 Pemberton Drive 43606, both of Toledo, Ohio
No Drawing. Continuation of abandoned application Ser. No. 849,236, July 24, 1969, which is a continuation of application Ser. No. 588,743, Oct. 24, 1966. This application May 13, 1971, Ser. No. 143,243
Int. Cl. C03b *29/00*
U.S. Cl. 65—32 **10 Claims**

A glass substrate having a composition consisting essentially of 50–94 mole percent SiO_2, 1.5–35 mole percent Cu_2O, 0.5–30 mole percent Al_2O_3, 0–6 mole percent Fe_2O_3, 0 to 6 mole percent AlF_3, 0–6 mole percent NiO, 0–6 mole percent CoO and 0–11 mole percent TiO_2 and having an exposed electrically conductive surface of metallic copper developed from the Cu_2O constituent in situ of said glass substrate by exposure of said glass substrate at elevated temperatures to successive oxidizing and reducing conditions.

3,704,111

RIPENING OF SUGARCANE BY USE OF ALKYL DERIVATIVES OF 3-PHENOXY PYRIDAZINE

Louis G. Nickell, Honolulu, Hawaii, assignor to Hawaiian Sugar Planters Association, Honolulu, Hawaii
No Drawing. Filed Aug. 14, 1970, Ser. No. 63,927
Int. Cl. A01n *9/22*
U.S. Cl. 71—92 **6 Claims**

Sucrose yield of sugarcane is increased by treating sugarcane a few weeks prior to harvest with 3-(alkyl phenoxy)pyridazine compounds.

3,704,112

TRISUBSTITUTED-s-TRIAZINE CHLOROACETALDEHYDE ADDUCTS USEFUL AS HERBICIDES

Logan C. Bostian, Convent Station, N.J., assignor to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Oct. 24, 1969, Ser. No. 869,378
Int. Cl. A01n *9/22*
U.S. Cl. 71—93 **2 Claims**

Novel adducts of 2-alkylamino-4-amino-6-chloro-s-triazines with chloroacetaldehydes are prepared by reacting the amino substituted-s-triazine with di- or trichloroacetaldehyde in an inert solvent. Reaction temperatures of 40 to 100° C. for one-half to one hour are preferred. The reaction mixture may be cooled to separate the product; evaporation of the solvent at advanced temperatures should be avoided as this may form undesirable by-products. The products are highly selective heribicides. The compound 2-chloro - 4 - (1-hydroxy-2,2,2-trichloroethylamino)-6-isopropylamino-s-triazine is particularly useful because it will selectively destroy weeds in both corn and oat crops, making possible an initial crop of corn immediately followed by an oat crop.

3,704,113

CHLORIDIZING ALUMINA-CONTAINING ORE

Clarence L. Hildreth, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.
No Drawing. Filed May 28, 1970, Ser. No. 41,596
Int. Cl. C22b *1/08, 21/00*
U.S. Cl. 75—1 **3 Claims**

A method of beneficiating or upgrading alumina-silica or aluminum-silicate ores, especially natural clays containing substantial amounts of minerals such as kyanite, diaspore and the like, wherein the ore is heated to a relatively high temperature and treated with chlorine.

3,704,114

PROCESS AND FURNACE CHARGE FOR USE IN THE PRODUCTION OF FERROSILICON ALLOYS

Benjamin John Wilson, Youngstown, N.Y., Richard J. McClincy, Tucson, Ariz., and James Herbert Downing, Clarence, N.Y., assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed Mar. 17, 1971, Ser. No. 125,435
Int. Cl. C22c *39/44*
U.S. Cl. 75—3 **8 Claims**

An agglomerated furnace charge, and process thereof, for use in the electric furnace production of ferrosilicon alloys having 45% to 95% silicon by weight. The charge comprises a fine fraction and a coarse fraction of silica homogeneously admixed with a particulated iron-bearing material, a particulated carbonaceous reducing agent and a bulking agent.

3,704,115

HIGH ALLOY STEEL POWDERS AND THEIR CONSOLIDATION INTO HOMOGENEOUS TOOL STEEL

Erik Goran Wastenson, Viken, and Georg Heinrich Arthur Gerhard Bockstiegel, Hoganas, Sweden, assignors to Hoganas AB, Hoganas, Sweden
No Drawing. Filed Feb. 23, 1971, Ser. No. 118,186
Claims priority, application Sweden, Aug. 28, 1970, 11,689/70
Int. Cl. B22f *9/00*
U.S. Cl. 75—.5 BC **4 Claims**

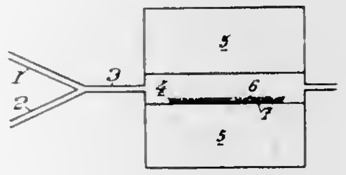
The high alloy steel powder contains one or more elements with a strong affinity to oxygen, such as titanium, chromium, and vanadium.

The oxygen content exceeds 0.15%, and the carbon content is related to the oxygen content and to the theoretical carbon content which would stoichiometrically be necessary for forming carbides with the alloying elements. Porous billets are produced by heating the powder in a vacuum to 900–1250° C. to reduce the oxygen content to 0.05%.

3,704,116

DISPERSIONS OF NITRIDES IN A METAL OR ALLOY AND THEIR METHOD OF PREPARATION

Rene A. Paris and Dominique Thibaudon, Lyon, Marc P. Roubin, Villeurbanne, and Jacques M. Paris, Lyon, France, assignors to Agence Nationale de Valorisation de la Recherche, Paris, France
Filed July 1, 1970, Ser. No. 51,517
Claims priority, application France, July 4, 1969, 6922754
Int. Cl. C22c *11/04;* **C01b** *21/06*
U.S. Cl. 75—.5 AC **7 Claims**



The dispersions are characterised by the fact that the particles of single or mixed nitrides are distributed uniformly in the midst of the selected base metal or alloy. To manufacture these dispersions a mixed oxide, a coprecipitate of hydroxides or a mixed complex of a first metal providing the nitride and of a second metal providing the base metal are subjected to a heat treatment in an enclosure in an atmosphere simultaneously reducing and nitriding of hydrogen and ammonia or nitrogen. The heat treatment is carried out at less than 1100° C. to which the starting materials are brought at a speed of 100 to 400° C./hour. These dispersions are used in conventional techniques of powder metallurgy.

3,704,117

PROCESS FOR DECOMPOSING INTERMETALLIC COMPOUNDS IN METALS

Alex R. Valdo, Baton Rouge, La., and Freeman M. Sanderford, Dalton, Ga., assignors to Ethyl Corporation, New York, N.Y.
No Drawing. Continuation-in-part of appplication Ser. No. 744,307, July 12, 1968. This application July 21, 1971, Ser. No. 164,952
Int. Cl. B22d *23/08*
U.S. Cl. 75—.5 C **8 Claims**

A process for at least partially decomposing intermetallic compounds in metal and metalloid-containing alloys. The invention is characterized by heating the alloy to a temperature at least as high as the melting temperature of the intermetallic compound but below the melting temperature of at least one of the metals or metalloids in the alloy for a period of time sufficiently long to thermally dissociate at least a portion of the intermetallic compound and then rapidly cooling the alloy to minimize re-formation of the dissociated compound by blowing the melt.

3,704,118

COBALT-VANADIUM-IRON ALLOY

Carl P. Stroble, Natrona Heights, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.
No Drawing. Continuation-in-part of application Ser. No. 47,127, June 17, 1970. This application Dec. 27, 1971, Ser. No. 212,702
Int. Cl. C22c *19/00*
U.S. Cl. 75—170 **4 Claims**

Described herein is an improved alloy possessing an outstanding combination of strength and electrical properties which consists essentially of cobalt, vanadium, molybdenum and iron and in which the molybdenum is limited to 0.25 to 1% with a combined vanadium plus molybdenum content of 1.5 to 2.5%.

3,704,119

ELECTROPHOTOGRAPHIC PROCESS USING TONER OF SAME REFRACTIVE INDEX AS ORGANIC PHOTOCONDUCTIVE LAYER

Satoru Honjo, Syu Watarai, and Hisatake Ono, Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
No Drawing. Filed July 31, 1970, Ser. No. 60,116
Claims priority, application Japan, Aug. 7, 1969, 44/62,016
Int. Cl. G03g *13/08, 13/22*
U.S. Cl. 96—1 R **7 Claims**

A method for making electrophotographic reproductions which comprises the first step of forming an electrostatic latent image on an organic photoconductive layer which includes component materials of substantially equal reflective indices, and which includes light scattering inner surfaces homogeneously throughout its thickness or near the surface of the layer whereby the layer has an opaque appearance. The latent image is then developed according to any of the known electrophotographic development procedures, thus converting the latent image into a toner image, which decreases the light-scattering property of the organic photoconductive layer when impregnated into the layer. The toner deposited area of the layer is then made more transparent than the remaining areas by the action of heat and/or a solvent for the toner.

3,704,120

METHOD OF MULTIPLE TRANSFER OF LATENT ELECTROSTATIC IMAGES

Horst Kosche, 14 Holzstrasse, 516 Duren, Germany
No Drawing. Filed Jan. 14, 1971, Ser. No. 106,607
Int. Cl. G03g *13/18, 13/22*
U.S. Cl. 96—1 R **21 Claims**

An electromagnetographic method of printing comprises generating a latent electrostatic or magnetic image on an image carrier which is not magnetizable but is electrically conductive. A magnetizable, electrically conductive powder is applied to develop the image and the developed image is fixed on the carrier by aid of a substantially uniform magnetic field, which holds the magnetizable particles in place. While so held in place, the image particles are charged and brought into contact with an image receiving material. The charge on the magnetized particles induces a charge on the image-receiving material corresponding to the image. The charged image-receiving material is then removed and the image developed and fixed in the known manner as by use of a triboelectric toner. The magnetically-fixed master image may be recharged and used repeatedly for generation of electrostatic image charges on image carrier material; when the required number of images have been produced, the master image is removed by removing the magnetic field and brushing or blowing away the particles.

3,704,121

ELECTROPHOTOGRAPHIC REPRODUCTION PROCESS USING A DUAL LAYERED PHOTORECEPTOR

Katsuo Makino, Yoshihiko Yamada, and Jun Onozaki, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Sept. 19, 1969, Ser. No. 859,333
Claims priority, application Japan, Sept. 21, 1968, 43/68,510
Int. Cl. G03g *5/00*
U.S. Cl. 96—1 **7 Claims**

Process of electrophotography using a photosensitive member having two photoconductive layers, at least a portion of the range of the spectral sensitivity of the one photoconductive layer being different from at least a portion of the range of the spectral sensitivity of the other photoconductive layer comprising the steps of applying electrostatic charges having opposite polarities in any desired pattern to a surface of one of the two photoconductive layers and to the boundary between the above described two photoconductive layers or a region adjacent thereto, respectively, thereby forming an electrostatic field in the above-mentioned one photoconductive layer, applying mobile electric charges to the above-mentioned one photoconductive layer while it is exposed to a light bearing therein an image to be recorded, the light being of such characteristics that the above-mentioned one photoconductive layer is not rendered substantially photoconductive while the other photoconductive layer is rendered to phoconductive, thereby discharging the electrostatic charges in both faces of the above-mentioned one photoconductive layer according to the photoconductivity of the other photoconductive layer substantially through the other photoconductive layer and the mobile electric charges by virtue of the electrostatic field in the above described one photoconductive layer and an external voltage so as to form an electrostatic latent image in the above described one photoconductive layer, and exposing the above-mentioned one photoconductive layer to a light consisting of spectral components which render the above-described one photoconductive layer to be photoconductive so that the latent image is erased after it has been utilized.

3,704,122

ELECTROPHOTOGRAPHIC PLATE COMPRISING A PHOTOCONDUCTOR DISPERSED IN A RESIN BINDER

Nario Yamaguchi, Sakae Shimizu, and Kazuo Tubuko, Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

No Drawing. Continuation of abandoned application Ser. No. 780,282, Nov. 29, 1968. This application June 10, 1971, Ser. No. 151,926

Claims priority, application Japan, Dec. 6, 1967, 42/77,946, 42/77,947; Dec. 12, 1967, 42/79,629; Dec. 23, 1967, 42/82,581; Dec. 27, 1967, 43/83,736

Int. Cl. G03g *5/04*

U.S. Cl. 96—1.8 **6 Claims**

An electrophotographic copying material comprising a support and a light-sensitive or photoconductive layer formed on one surface of said support by a resinous binder, wherein said photoconductive layer contains a photoconductive substance and is formed by a series of steps of (1) dispersing said photoconductive substance in an aqueous emulsion prepared by emulsifying a synthetic film-forming resin or a natural film-forming resin in an aqueous emulsifier solution containing a volatile basic compound and an acidic compound thereafter (2) coating the resultant emulsion containing dispersed photoconductive substance on said support, and then drying the coated support.

3,704,123

DYE SENSITIZED PHOTOCONDUCTIVE MATERIAL

Katsuo Makino and Iwao Sawato, Minami-Ashigara Machi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of abandoned application Ser. No. 720,935, Apr. 12, 1968. This application May 10, 1971, Ser. No. 142,081

Int. Cl. G03g *5/04*

U.S. Cl. 96—1.6 **16 Claims**

A photoconductive material formed from the admixture of a fine powder of cadmium carbonate and cadmium sulfide with a dyestuff capable of absorbing radiation energy and transmitting it to said fine powder and wherein said admixture may additionally include iodine or an iodine-containing compound.

3,704,124

DIAZO-CONTAINING MATERIAL EXHIBITS AN IMAGEWISE CHANGE IN TRIBOELECTRIC CHARGING PROPERTIES

Dale H. Conant, 32 Kings Court Way, Rochester, N.Y. 14617

No Drawing. Filed June 30, 1970, Ser. No. 51,352

Int. Cl. G03g *5/02, 13/14, 13/22*

U.S. Cl. 96—1 R **12 Claims**

Visible images corresponding to latent electrostatic charge images are produced on photographic layers incorporating a radiation-sensitive diazo material, such as a diazonium salt or a diazo resin, which exhibits a change in triboelectric series position upon exposure to activating rays, by means of a photographic process which includes (a) imagewise exposing the photographic layer to electromagnetic radiation capable of effecting an exposed imagewise change in triboelectric series position, (b) differentially triboelectrically charging the surface of the exposed photographic layer imagewise to form a latent electrostatic image thereon and (c) developing the latent electrostatic image by contacting the charged surface with a developer composition containing electrostatically attractable toner particles, to form a pattern of the toner particles on the charged surface corresponding to the non-exposed or the exposed regions. The inclusion of at least one surface active agent, such as alkali metal or ammonium alkyl sulfonate, alkali metal or ammonium sulfonated alkyl carboxylate esters, alkali metal or ammonium aryl sulfonates or alkylamines, in the photographic layer promotes not only ease of coating, but also an enhanced developed image density.

3,704,125

COLOR PROCESS

Arthur Donald Ketley, Columbia, Clifton Leroy Kehr, Silver Spring, and Jennie Lee Touchette, Columbia, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Original application Oct. 11, 1968, Ser. No. 766,948, now Patent No. 3,623,879. Divided and this application July 15, 1971, Ser. No. 163,080

Int. Cl. G03c *7/16, 7/00, 7/68*

U.S. Cl. 96—14 **3 Claims**

This invention is directed toward forming a silverless continuous tone photographic image having a scale index between 0.5 and 1.5 and a gamma of 0.5–1.5 (see "Kodak Notes on Practical Densitometry," Pamphlet No. E59, pages 1–17 Eastman Kodak Company, Rochester, N.Y., for definitions) from a supported pigment or dye filled liquid photosensitive composition by selectively insolubilizing portions of the composition on exposure to actinic radiation and removing the unexposed liquid portion of the composition from the support.

3,704,126

SILVER IMAGE STABILIZATION WITH NOBLE METAL COMPOUNDS

Edwin H. Land, Cambridge, Stanley M. Bloom, Waban, and Leonard C. Farney, Melrose, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 7, 1970, Ser. No. 95,424

Int. Cl. G03c *5/54*

U.S. Cl. 96—29 R **56 Claims**

The present invention relates to a photographic silver diffusion transfer process which comprises, in essence, exposing a silver diffusion transfer film unit which comprises photosensitive silver halide and silver precipitating nuclei; contacting the exposed film unit with a processing composition which comprises a silver halide developing agent and a silver halide solvent to provide a visible silver image to the unit, as a function of exposure; and coacting the silver image with a noble metal below silver in the Electromotive Force Series of Elements at a concentration effective to enhance stability of a silver image provided by diffusion transfer processing of the film unit.

3,704,127

CO-IRRADIATION METHOD FOR PRODUCING POSITIVE IMAGES UTILIZING PHOTOTROPIC SPIROPYRAN OR INDENONE OXIDE OR DUAL RESPONSE PHOTOSENSITIVE COMPOSITION

Rolf Dessauer, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 880,301, Nov. 26, 1969. This application Aug. 17, 1970, Ser. No. 64,220

Int. Cl. G03c *5/24*

U.S. Cl. 96—48 **8 Claims**

Method for producing positive images by irradiating photosensitive compositions which are characterized by forming color on irradiation with light in a first wavelength range and by being prevented from forming color on irradiation with light in a different second wavelength range. The method comprises simultaneously exposing such composition disposed as an image-capture surface to radiations in both wavelength ranges, with

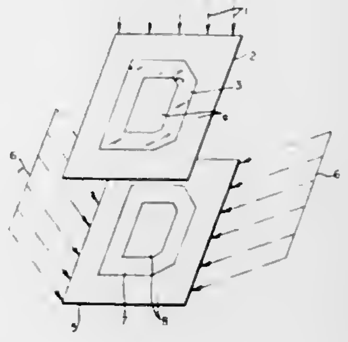
(1) the color-preventing radiation being applied pattern-wise according to the desired image to be captured,

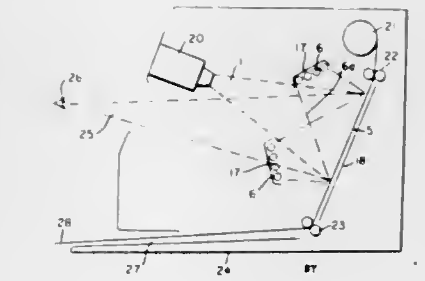
(2) the color-forming radiation being applied over the entire surface to be imaged, and

(3) the intensities and the relative intensities of the two radiations being such that

  (i) the color-preventing radiation is itself effective for color-preventing and

  (ii) the color-forming radiation is itself effective to cause color formation in other than the co-struck areas but is ineffective in the presence of the color-preventing radiation in the co-struck areas to cause substantial color formation.





A preferred composition for use with this method is a mixture of

(A) color forming components which are responsive to said first wavelength range and thereby produce a first photo-induced oxidation-reduction reaction, and

(B) deactivating components which are responsive to said second wavelength range and thereby produce a deactivating agent by a second oxidation-reduction reaction, said deactivating agent thus produced being a stronger reducing agent than the reductant member of the color-forming components and thereby preventing the color-forming reaction when the composition is subsequently exposed to the first wavelength range.

Another useful photoimageable system includes photochromic compounds, e.g., the spiropyrans, which form color on being exposed to light of one wavelength range and which revert to the original color on being exposed to light of a second wavelength.

3,704,128

N-YLIDE COMPOUNDS AS ANTISTATIC AGENTS IN PHOTOGRAPHY

Ken'Ichi Koda, Shoji Kikuchi, Tsuneo Wada, Yoshimi Kuwabara, Akira Horikoshi, and Kensaku Tanimura, Tokyo, and Sadao Sugita, Hanno, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

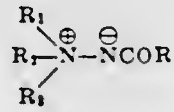
No Drawing. Filed Mar. 11, 1970, Ser. No. 18,714

Claims priority, application Japan, Mar. 14, 1969, 44/18,909

Int. Cl. G03c *5/26, 1/02*

U.S. Cl. 96—50 **5 Claims**

A new use, as an antistatic agent for light-sensitive silver halide photographic material, of an N-ylide represented by the general formula



$$R_2-\overset{\oplus}{N}(R_1)(R_3)-\overset{\ominus}{N}COR_4$$

wherein R_1, R_2 and R_3 are individually an alkyl group, an aralkyl group or a group derived from any of said groups, and R_4 is an alkyl group, an aryl group or a hetero ring.

3,704,129

TWO COMPONENT DIAZOTYPE COMPOSITION HAVING ADDITIONALLY AN ANILINE COMPOUND

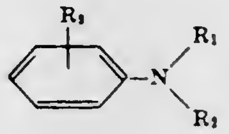
Henri G. J. de Boer and Thomas Brooshooft, Delft, and Anton Wemmers, den Hoorn, Holland, assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed Feb. 6, 1970, Ser. No. 9,428

Int. Cl. G03c *1/58, 1/60*

U.S. Cl. 96—91 R **9 Claims**

A light-sensitive diazotype material comprising a light-sensitive diazonium salt, an organic coupling component and an aromatic amine of the general formula



where R_1 and R_2, which are the same or different, can be hydrogen, alkyl, hydroxyalkyl, aryl, substituted aryl, aralkyl or substituted aralkyl but R_1 and R_2 cannot both be hydrogen and R_3 can be halogen or the same as R_1 and R_2.

3,704,130

PHOTOGRAPHIC FINE GRAIN SILVER HALIDE EMULSIONS

Robert Joseph Pollet, Vremde, Herman Adelbert Philippaerts, Mortsel, Jozef Frans Willems, Wilrijk, and Frans Henri Claes, Edegem, Belgium, assignors to Gevaért-Agfa N.V., Mortsel, Belgium

No Drawing. Filed Oct. 2, 1970, Ser. No. 77,695

Claims priority, application Great Britain, Oct. 29, 1969, 53,025/69

Int. Cl. G03c *1/02*

U.S. Cl. 96—114.7 **14 Claims**

A process of preparing fine-grain light-sensitive silver halide emulsions of the Lippmann type is described wherein precipitation of the silver halide grains occurs in the presence of a compound of the formula:

$$Z—A—X$$

wherein each of Z and X stands for a heterocycle comprising the moiety =N— and A represents a chemical bond, alkylene, alkylene interrupted by oxygen or —N(R)—, R being hydrogen or C_1–C_4 alkyl, arylene, alkenylene or —S-alkylene-S— or —S-alkylene— the alkylene groups of which may be interrupted by oxygen or the group

—N(R)—. The average silver halide grain size can be reduced to less than 50 nm. The emulsions show a high diffraction efficiency and a high signal to noise ratio.

3,704,131

READILY DISPERSIBLE DR[illegible]LUTEN PRODUCT, PROCESSES FOR MA[illegible] IT, AND USES THEREOF

Richard J. Hampton, Pierrefonds, Quebec, Jacques R. Rolland, Longueil, Quebec, and Thomas Gallo, Toronto, Ontario, Canada, assignors to The Ogilvie Flour Mills Company, Limited, Montreal, Quebec, Canada

Filed Apr. 7, 1970, Ser. No. 26,405
Int. Cl. A23j *3/00;* **A21d** *2/36*
U.S. Cl. 99—17 2 Claims

Powdered vital wheat gluten is difficult to disperse in water and a dispersion, once obtained, is unstable since individual particles readily coalesce with the formation of an intractable, lumpy mass. By converting the powdered gluten into novel structures in the form of agglomerates thereof under conditions which do not denature the gluten, the gluten can be readily wetted out and dispersed in water to form a relatively stable dispersion. Accordingly, the agglomerated gluten is ideally suited for the manufacture of yeast-leavened bakery products, especially by continuous dough-making processes.

3,704,132

PURIFICATION OF COFFEE OIL AS A STABLE COFFEE AROMA CARRIER

Rudolf G. K. Strobel, Colerain Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Mar. 19, 1971, Ser. No. 126,305
Int. Cl. A23f *1/04*
U.S. Cl. 99—65 5 Claims

A method of obtaining a stable coffee oil which comprises primarily triglycerides and which is substantially free of diterpene esters. The stabilized coffee oil is obtained by utilization of particular vacuum distillation conditions to distill crude coffee oil, and to yield vacuum distilled coffee oil which is substantially diterpene ester-free and resistant to oxidation and rapid rancidity development.

3,704,133

POPCORN PRODUCT

Paul Kracauer, 210 W. 90th St., New York, N.Y. 10024

No Drawing. Filed June 8, 1970, Ser. No. 44,620
Int. Cl. A23l *1/10*
U.S. Cl. 99—83 9 Claims

The invention relates to a new product of corn kernels which upon popping in the ordinary manner, i.e. a closed container, results in popcorn which is uniformly flavored, e.g. with shortening and salt, with sugar, with candy flavor or with cheese. This is accomplished by mixing the corn kernels with shortening, a lipophilic surfactant and with water prior to the popping.

3,704,134

PROCESS FOR PREPARING AN INSTANT OAT CEREAL

Kenneth S. Ronai, Ridgewood, and Henry C. Spanier, Dumont, N.J., assignors to Nabisco, Inc., New York, N.Y.

No Drawing. Filed July 23, 1970, Ser. No. 57,763
Int. Cl. A23l *1/10*
U.S. Cl. 99—83 5 Claims

An instant oat cereal product, requiring little or no cooking is prepared by adding to processed oats, a pregelatinized starch component as a texturizing agent and a process for its preparation.

3,704,135

METHOD OF PREPARING A FABRICATED SKIN FROM POULTRY MEAT AND SKIN AND PRODUCT PRODUCED THEREBY

Douglas Hale, St. Louis, Mo., James C. Manuel, Belleville, Ill., and Nicholas R. Beck, Chamblee, Ga., assignors to Ralston Purina Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 759,510, Sept. 12, 1968. This application Feb. 8, 1971, Ser. No. 113,745
Int. Cl. A22c *21/00*
U.S. Cl. 99—108 11 Claims

Poultry skin and edible poultry by-products are formed into a resultant matrix having some coarse particle sizes therein preferably by a chopping operation. A predetermined quantity of the matrix is then subjected to heat and pressure which flattens the matrix into a sheet having a desired shape and thickness. The heat is applied to the matrix for a sufficient period of time to partially coagulate or coagulate at least the surface protein of the matrix while it is under pressure. The resultant product resembles the looks, color, and taste of natural poultry skin as well as exhibiting similar handling characteristics and will adhere to the surface of poultry products in both frozen and cooked conditions.

3,704,136

PREPARATION OF RICOTTA CHEESE CURD

John Lavarda, 5999 Brecksville Road, Cleveland, Ohio 44131

Filed Mar. 16, 1970, Ser. No. 19,939
Int. Cl. A23c *19/02*
U.S. Cl. 99—116 23 Claims

A soft curd ricotta cheese is made by a process wherein the mixture containing the milk solids is heated and slowly acidified, e.g. with acetic acid and this slow acidification causes slow precipitation of the ricotta curd so that it settles to the bottom of the vat rather than rising to the top. This produces a fine grained curd which is kept sterile by the liquid above it being in excess of 140 degrees F. The acidification continues until the liquid is clear and essentially all the solids have settled and then the clear liquid is drained off leaving the ricotta curd ready for use.

3,704,137

ESSENTIAL OIL COMPOSITION AND METHOD OF PREPARING THE SAME

Eugene E. Beck, 217½ Ellsworth Ave., Anaheim, Calif. 92805

Filed June 11, 1970, Ser. No. 45,287
Int. Cl. A23l *1/22*
U.S. Cl. 99—140 R 2 Claims

A relatively stable, non-crystallizable essential oil composition in finely divided, rod-like particulate form, and a method of producing such a composition from an aqueous mixture of sucrose, hydrolyzed cereal solids having a dextrose equivalent (DE) of less than about 20, and preferably between 10 and 15, and an emulsifier. An aqueous mixture of the sucrose, hydrolyzed cereal solids and an emulsifier is subjected to agitation and to heating at boiling temperatures until the boiling point of the mixture is at about 122° C. The resulting emulsion is then cooled to about 114° C., while mixing therewith the desired essential oil, either with added emulsifier or with sufficient emulsifier present to form a homogeneous melt. The melt is then extruded into a relatively cool liquid solvent, such as isopropanol, to form the melt into rods and to wash off any excess of essential oil from the surface of said rods. Thereafter, the rods are subjected to centrifugal action to remove the excess liquid solvent. Prior to final drying of the rod-like particles, an inert finely divided silica, such as a pyrogenic silica, is mixed with the broken up rods and the mixture then subjected to screening and final drying to produce a particulate essential oil composition in the form of fine rod-like particles having little or no tendency to stick together due to the admixture of the siliceous inert material. In the final screening and drying steps any overly fine and overly coarse particles of the pyrogenic silica and/or of the particulate essential oil composition are screened out of the product before the same is packed into containers for storage and subsequent use.

3,704,138

LOW-CALORIE SWEETENING COMPOSITION AND METHOD OF PRODUCING THE SAME

Anthony Laurence La Via, East Brunswick, and Richard Lawrence O'Laughlin, Jamesburg, N.J., and Richard Wiegmann Walton, Langhorne, Pa., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 650,659, July 3, 1967. This application Sept. 17, 1970, Ser. No. 73,252
Int. Cl. A23l *1/26*
U.S. Cl. 99—141 A 5 Claims

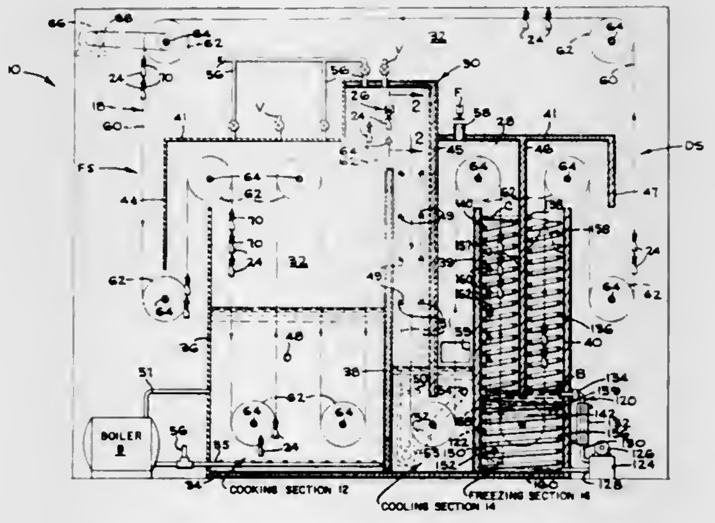
This invention relates to novel low calorie sweetening compositions and methods of producing them. More particularly, this invention relates to low calorie, low bulk density sweetening compositions having sweetening power on a volume basis approximately equal to that of sucrose, and which is in the form of a granular free-flowing solid, similar in appearance to ordinary cane sugar. The novel compositions of this invention comprise a combination of hydrolyzed corn starch, arabinogalactan and artificial sweeteners.

3,704,139

COOKING AND FREEZING PRODUCTS IN FLEXIBLE CONTAINERS

Donald C. Wilson, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Feb. 3, 1971, Ser. No. 112,194
Int. Cl. B65b *55/14;* **A23l** *3/36, 3/02*
U.S. Cl. 99—192 R 13 Claims



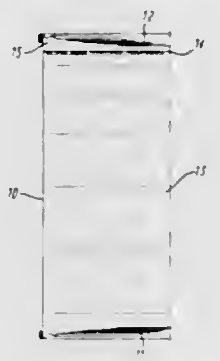
A method and apparatus for continuously heat treating food filled flexible containers by stretching each container across its open mouth to provide a one-way valve therein and to then cook or blanch the product retaining the product and all liquids and solids emitting therefrom within the container while allowing only gases to escape from the containers during the cooking step. After cooking, the mouth of the flexible container or pouch is sealed, the pouch is cooled in water and, after being dried, is thereafter moved through a freezing zone for quickly freezing the contents of the pouch. The method provides a product in the form of a boil-in-the-bag pouch having a low headspace and a frozen food product therein which is high in nutritional value. Since the heat treatment fluids used during cooking, cooling, and freezing are not contaminated by the food product, these fluids are recirculated for reuse.

3,704,140

STERILISATION OF TINS

Maurice Petit, Paris, and Georges Thomas, Ville-d'Avray, France, assignors to Ets J. J. Carnaud & Forges de Basse-Indre, Paris, France

Filed Dec. 19, 1969, Ser. No. 886,585
Claims priority, application France, Dec. 30, 1968, 181,852
Int. Cl. A23l *3/02*
U.S. Cl. 99—214 9 Claims



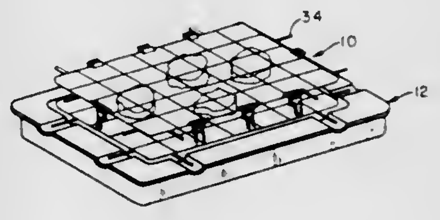
To prevent bursting of a can due to the vacuum formed therein on cooling after sterilisation a part of the can, generally an end thereof, is subjected to a permanent deformation, effected before the can is fully cooled, which reduces the internal volume of the can.

3,704,141

VARIABLE CAPACITY BROILING EQUIPMENT

Sidney Grossman, 180 Samoset Ave., Quincy, Mass. 02121

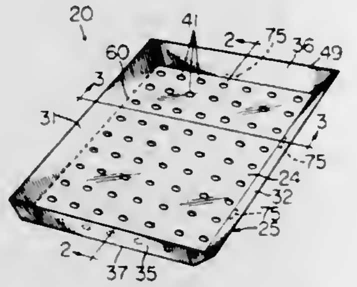
Filed Sept. 15, 1970, Ser. No. 72,439
Int. Cl. A47j *37/04*
U.S. Cl. 99—397 1 Claim



A variable capacity broiling rack is provided in combination with a cooperating broiling pan and a detachable handle for periodically turning the rack in the pan. The rack is provided with articulated grid work panels connected by extensible spring hinges and secured in the closed position with food therebetween by means of extensible spring latches. Outwardly extending supports seat in cooperating grooves formed in the pan. The handle is provided with a pair of spaced hook-like members for grasping the rack.

3,704,142
COOKING PAN HAVING ARTICLE-SUPPORTING WALL ABOVE BOTTOM WALL

Calvin L. Wilson, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.
Continuation-in-part of application Ser. No. 844,442, July 24, 1969. This application Jan. 24, 1972, Ser. No. 220,275
Int. Cl. A47j *36/20*
U.S. Cl. 99—446 **15 Claims**



A disposable cooking pan which is particularly adapted for broiling food products is provided and such pan has metallic foil defining practically its entire exposed inside and outside surfaces. The pan has an article-supporting wall arranged above a bottom wall with a space provided therebetween for collecting juice, or the like, exuding from a product contained in the pan and the article-supporting wall has means for absorbing such juice. An improved apparatus for and method of making the article-supporting wall are also presented herein.

3,704,143
AEROSOL SPRAY POLISH

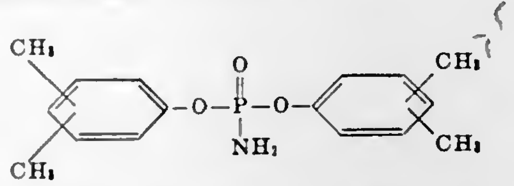
Milton Nevitt, New Hyde Park, N.Y., assignor to Spray 'N Shine Incorporated, Wilmington, Del.
No Drawing. Filed Oct. 14, 1971, Ser. No. 189,398
Int. Cl. C09g *1/10*
U.S. Cl. 106—5 **5 Claims**

An aerosol spray shoe polish that is wax and silicone free. Ethyl cellulose is used as a base. A plasticizer is employed as is three solvents having different boiling points for providing high gloss, no wax build-up solubility of previous coatings, and dispersal of previously applied wax.

3,704,144
FLAME RETARDANT RAYON COMPOSITION AND PROCESS

Arthur D. F. Toy, Stamford, Conn., and Edward N. Walsh, New City, N.Y., assignors to Stauffer Chemical Company, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 737,354, June 17, 1968. This application Jan. 20, 1971, Ser. No. 108,203
Int. Cl. C09d *5/18;* **C08b** *21/20*
U.S. Cl. 106—15 FP **4 Claims**

A process for spinning synthetic fibers, such as rayon, consisting of incorporating therein a fire retardant composition of matter consisting essentially of a dixylyl phosphoramidate having the formula:



wherein the methyl radicals may be attached to any of 2, 3, 4, 5 or 6 positions.

3,704,145
INVESTMENT CASTING WAX

Richard E. Ware, Trainer, and John C. Merges, Jr., Glen Mills, Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.
No Drawing. Filed May 3, 1971, Ser. No. 139,818
Int. Cl. B28b *7/34;* **C08h** *9/06*
U.S. Cl. 106—38.7 **20 Claims**

An improved investment casting wax composition consisting essentially of about 35–65 weight percent refined petroleum wax, solid chlorinated polyphenyl, certain ester type montan waxes, Fischer-Tropsch wax, and a metal soap. Said composition has the advantage of low shrinkage, low penetration and rapid setup.

3,704,146
CERAMIC WHITEWARE COMPOSITIONS COMPRISING A BORATE FLUX

Joseph Dulat, Fetcham, England, assignor to United States Borax & Chemical Corporation, Los Angeles, Calif.
No Drawing. Filed Dec. 2, 1969, Ser. No. 881,577
Claims priority, application Great Britain, Dec. 3, 1968, 57,372/68
Int. Cl. C04b *33/00*
U.S. Cl. 106—45 **1 Claim**

Flux for ceramic compositions having 30–60% B_2O_3, 20–60% SiO_2, 5–30% CaO and/or MgO and 0–15% Na_2O.

3,704,147
FIBROUS INORGANIC MATERIALS

Clarence James Hardy, Wantage, and Michael Joseph Holdoway, Abingdon, England, assignors to United Kingdom Atomic Energy Authority, London, England
No Drawing. Filed Apr. 30, 1970, Ser. No. 33,514
Claims priority, application Great Britain, May 6, 1969, 23,174/69
Int. Cl. C04b *31/04*
U.S. Cl. 106—55 **9 Claims**

Fibres of an inorganic material such as zirconia or alumina are made by preparing a highly viscous but treacly sol of the material and spray drying the sol under conditions which favour the formation of fibres as distinct from rounded particles.

3,704,148
ADHESIVE FOR WATER-RESISTANT CORRUGATED PAPERBOARD BONDS

Roy E. Wright, Berkeley, Calif. (5679 Merriwood Drive, Oakland, Calif. 94611), and Joseph Vastag, 901 Grayson St., Berkeley, Calif. 94710
No Drawing. Continuation-in-part of abandoned application Ser. No. 871,536, Nov. 17, 1969, which is a continuation of application Ser. No. 511,359, Dec. 3, 1965. This application Nov. 5, 1970, Ser. No. 87,351
Int. Cl. C09j *1/02, 3/24*
U.S. Cl. 106—79 **5 Claims**

This invention is an improvement in the art of water-resistant adhesives used in the manufacture of corrugated paperboard. These adhesives are composed of soluble silicates, soluble blood protein, and a small amount of a simple dialdehyde which controls the gelation temperature of the adhesive between about 37° and 55° C.

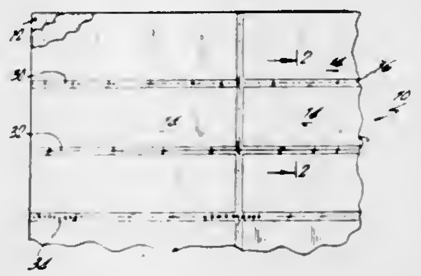
3,704,149
LIQUID BINDING AGENT FOR BONDED ARC WELDING FLUX

William T. Delong, Spring Garden Township, York County, Edwin R. Szumachowski, Springettsbury Township, York County, and Harold R. Heverly, Straban Township, Adams County, Pa. (all % The McKay Company, 1005 Liberty Ave., Pittsburgh, Pa. 15222)
No Drawing. Original application Oct. 13, 1970, Ser. No. 80,507. Divided and this application Dec. 20, 1971, Ser. No. 210,144
Int. Cl. C08h *17/24*
U.S. Cl. 106—286 **4 Claims**

Liquid binding agent for bonded arc welding flux consisting essentially of a uniform aqueous mixture of the following listed finely divided ingredients in the specified weights per 100 cc. of water: alkali metal aluminate of the class consisting of sodium aluminate and potassium aluminate, 5 to 40 grams; lithium fluoride, 3 to 30 grams; material of the class consisting of sodium fluoride and potassium fluoride, 2 to 25 grams.

3,704,150
CORRECTION MATERIAL HAVING VISUAL ALIGNING MEANS

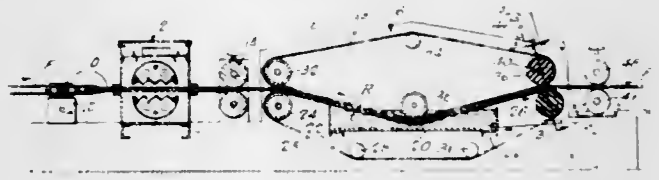
Victor Barouh, 935 Plum Tree Road, Westbury, N.Y. 11590, and Robert Glenn, 70—20 108th St., Forest Hills, N.Y. 11375
Filed Jan. 25, 1971, Ser. No. 109,457
Int. Cl. B41m *5/10*
U.S. Cl. 117—2 TC **4 Claims**



A material for correcting errors of any type of indicia and particularly typewritten errors. The correction material comprises a light-transmitting base sheet upon which are provided rectangular coatings of a composition, a portion of which is readily fractured from the base sheet and integrally bondable to the material to be corrected. The base sheet is perforated or serrated between coatings to facilitate alignment of the indicia with a coating.

3,704,151
METHOD FOR TREATING TUBULAR FABRICS

Edward Israel Aronoff, 605 Dorais St., St. Laurent, Quebec, Canada
Filed Mar. 30, 1970, Ser. No. 19,591
Int. Cl. B05c *3/103;* **D06c** *5/00*
U.S. Cl. 117—7 **7 Claims**



A process for impregnating tubular knit fabrics which includes the steps of continuously advancing the knitted fabric having a predetermined loop geometry, passing the fabric in a flattened condition between a pair of opposed moving contacting porous surfaces to support and maintain the loop geometry of the fabric, advancing the pair of porous surfaces, while pressing the fabric, through a liquid treating bath whereby the fabric is impregnated with liquid while the loop geometry is maintained, withdrawing the fabric from the bath and from between the porous surfaces and removing the excess liquid from the fabric, as it is withdrawn from the bath.

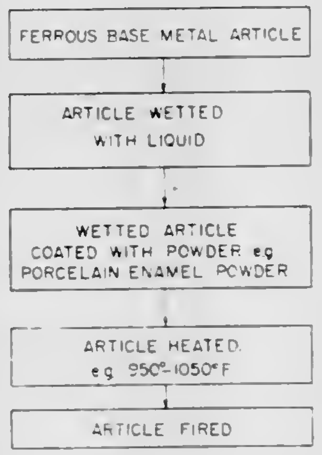
3,704,152
MAGNETIC RECORDING MEDIA

Hans Joerg Hartmann, Wachenheim, Georg Schnell, Ludwigshafen, Gerhard Werst, Neustadt, Horst Grosselfinger, Mannheim, Job-Werner Hartmann, Ludwigshafen, and Hansjoerg Bipp, Limburgerhof, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Sept. 10, 1970, Ser. No. 71,260
Int. Cl. H01f *10/02*
U.S. Cl. 117—235 **6 Claims**

Magnetic recording media comprising a non-magnetic support and a magnetic layer based on a magnetic pigment dispersed in a binder and containing a small amount of a liquid mixture of branched fatty acids having at least 95% by weight of C_{12} to C_{18} fatty acids and at least 40% by weight of branched C_{18} fatty acids.

3,704,153
PROCESS FOR ENAMELING FERROUS ARTICLES

Jerome J. Kanter, Palos Park, Ill., assignor to Crane Co., Chicago, Ill.
Continuation of applications Ser. No. 624,905, Mar. 21, 1967, and Ser. No. 654,438, July 19, 1967. This application May 9, 1969, Ser. No. 823,319
Int. Cl. C23d *5/00*
U.S. Cl. 117—23 **14 Claims**


FERROUS BASE METAL ARTICLE
ARTICLE WETTED WITH LIQUID
WETTED ARTICLE COATED WITH POWDER e.g PORCELAIN ENAMEL POWDER
ARTICLE HEATED e.g 950°-1050°F
ARTICLE FIRED

The process relates to improvements in the enameling of ferrous articles. The surfaces to be enameled are wetted with a liquid and enamel powder is supplied to the wetted surfaces to form a bisque. The bisque is baked, and the articles thereafter fired.

3,704,154
PROCESS FOR PRODUCING PHOTOGRAPHIC MATERIALS

Sumitaka Tatsuta and Wataru Ueno, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
No Drawing. Filed Feb. 18, 1971, Ser. No. 116,625
Claims priority, application Japan, Feb. 20, 1970, 45/14,938
Int. Cl. B41m *5/14;* **G03c** *1/76*
U.S. Cl. 117—34 **4 Claims**

A process for producing photographic materials comprising contacting a bi-axially stretched polystyrene support with a liquid containing at least a solvent or swelling agent for said polystyrene and gelatin dispersed therein, contacting the support with a non-solvent for said polystyrene to prepare a white opaque polystyrene support having a hydrophilic surface, and applying an emulsion or suspension containing gelatin to said support, is disclosed.

3,704,155
THERMOGRAPHIC STENCIL SHEET AND METHOD OF MAKING AN IMAGED STENCIL SHEET

Bror E. Anderson, Arlington Heights, and Margery L. Schick, Mount Prospect, Ill., assignors to Weber Marking Systems, Inc., Arlington Heights, Ill.

No Drawing. Continuation-in-part of application Ser. No. 674,153, Oct. 10, 1967. This application Apr. 9, 1970, Ser. No. 27,135

Int. Cl. B41m *1/24*

U.S. Cl. 117—35.5 **10 Claims**

A thermographic stencil sheet which may be imaged by heat generated by infrared ray absorption with but low oil transfer to an adjacent original includes an ink-pervious base sheet and an ink-impervious coating thereon of a heat-flowable composition of cellulose acetate butyrate film-forming material and plasticizing material partially but incompletely compatible with the film-forming material, the composition being characterized by forming a cooled melt having a defined pourable liquid volume, and the plasticizing material being characterized by defined tack and aniline point limits. The stencil sheet may be imaged by exposing an original in contact with the sheet to infrared radiation to generate heat in the image areas of the original sufficient to render the composition flowable in the image areas of the stencil sheet, and causing the composition to flow from the image areas to thereby form corresponding ink-transmitting openings in the stencil sheet.

3,704,156
CATALYST SOLUTION FOR ELECTROLESS PLATING ON NONCONDUCTORS

Edward F. Foley, Jr., Shan-Pu Tsai, and William A. Zatorsky, Painesville, Ohio, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 13, 1970, Ser. No. 54,571

Int. Cl. B44d *1/18*

U.S. Cl. 117—47 A **14 Claims**

A catalyst solution for use in electroless plating on nonconductors is prepared by dissolving a palladium salt in a solution of a complexing acid which forms monodentate ligands. The solution can be prepared using a palladium salt and a complexing acid such as acetic acid, monochloracetic acid, bromoacetic acid, dichloroacetic acid, trichloroacetic acid, glycollic acid, phosphoric acid and 1,3,5-pentanetricarboxylic acid.

3,704,157
COATED ARTICLE AND METHOD OF MAKING SAME

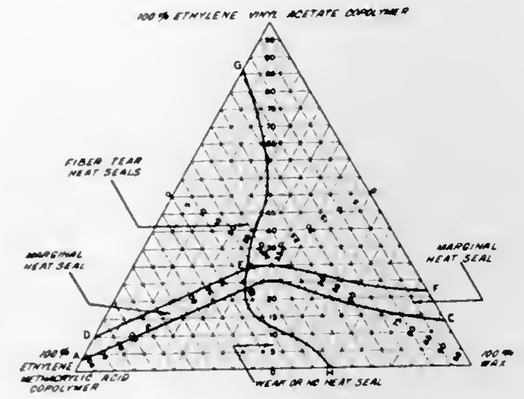
John William McDonald, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 23, 1970, Ser. No. 91,849

Int. Cl. C09j *7/04*

U.S. Cl. 117—68.5 **16 Claims**

A sheet material having heat seal properties including improved hot tack is provided by coating a paper sheet substrate with a mixture comprising (A) a copolymer of ethylene and a vinyl alkanoate and from 0 to about 10% of an alpha, beta-ethylenically unsaturated carboxylic acid, and (B) a copolymer of ethylene and an alpha, beta-ethylenically unsaturated carboxylic acid in which the carboxylic acid groups are neutralized to a predetermined extent, and, in the preferred embodiment (C) wax. A method for making the sheet material is also provided utilizing an aqueous dispersion of the stated mixture having a pH of at least 9 and preferably from about 10 to about 11.



3,704,158
TREATMENT OF POWDERED CHALK

George Alexander Rohan, Windsor House, Esher, England

No Drawing. Filed Dec. 3, 1970, Ser. No. 94,940

Claims priority, application Great Britain, Dec. 4, 1969, 59,335/69; July 27, 1970, 36,222/70

Int. Cl. B44d *5/00, 1/02*

U.S. Cl. 117—100 B **8 Claims**

Powdered chalk having a surface which is non-reactive with acids.

3,704,159
METHOD OF PROTECTING AND PRESERVING STONE OBJECTS

Edward Vale Sayre, Bellport, N.Y., assignor to New York University, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 860,012, Sept. 22, 1969. This application Apr. 30, 1971, Ser. No. 139,269

Int. Cl. C03c *17/00*

U.S. Cl. 117—123 A **15 Claims**

Process for preserving stone objects made of limestone, sandstone, or the like and containing at least 5 percent by weight of $CaCO_3$. Comprises contacting the stone with an aqueous solution of a barium or strontium salt of a monoester of sulfuric acid and then hydrolyzing at a pH not less than about 7, so as to precipitate barium or strontium sulfate in a slow, controlled manner and thereby effect consolidation of the stone.

3,704,160
FINISH FOR NYLON OR POLYESTER ROPE

William George Steinmiller, Charlotte, N.C., assignor to Fiber Industries, Inc.

No Drawing. Filed Dec. 30, 1970, Ser. No. 102,888

Int. Cl. B32b *27/02;* **C10m** *3/20*

U.S. Cl. 117—138.8 F **12 Claims**

Yarn, suited for making rope, comprising nylon or polyester carrying about 1 to 5% by weight of a finish comprising, by weight,

(a) about 5 to 25% of a described tri-fatty acid ester of a cross-linked, tetra-alkyl, hydroxy substituted furan or pyran,

(b) about 1 to 5% of a metallic fatty acid soap, and

(c) about 70 to 90% of an oil carrier.

3,704,161
PRODUCTION OF WOOD-PLASTICS COMPOSITE STRUCTURES

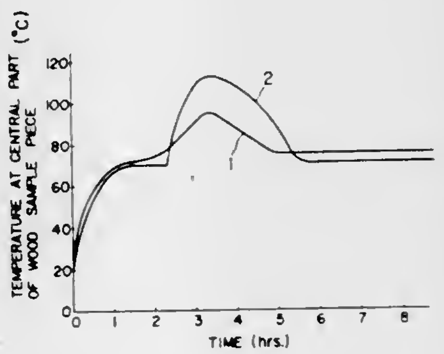
Yasuju Yamaguchi and Yujiro Nakayama, Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan

Filed Dec. 3, 1970, Ser. No. 94,888

Claims priority, application Japan, Dec. 4, 1969, 44/97,728

Int. Cl. B27k *3/36;* **B44d** *1/28*

U.S. Cl. 117—148 **9 Claims**



At least one compound selected from ester compounds and polyalkylene glycol compounds (e.g., methylethyl glycolate) is added to and dissolved in a vinyl monomer, which is then used to impregnate a wood matrix and caused to polymerize by irradiation with β-rays from an electron-beam accelerator thereby to produce a wood-plastics composite structure free of cracks.

3,704,162
SUBBING COMPOSITION FOR POLYESTER FILMS

Koji Oshibuchi, Motoo Kogure, Masaru Kanbe, and Nobuo Harajima, Tokyo, Japan, assignors to Keuffel & Esser Company, Morristown, N.J.

No Drawing. Filed Nov. 17, 1970, Ser. No. 90,439

Claims priority, application Japan, Nov. 20, 1969, 44/92,478

Int. Cl. G03c *1/80*

U.S. Cl. 117—76 F **9 Claims**

Polyester films are rendered acceptable of adherent layers by a coating of a subbing composition which includes a mixture of gelatin and a phenol derivatives with a polymer comprising units of a halogen-containing acrylic acid derivative. The subbing presents a hydrophilic surface which is receptive of polymeric coating compositions or aqueous coatings of silver halide or diazotype photographic compositions.

3,704,163
METHOD OF MANUFACTURING MINIATURIZED ELECTRIC CIRCUITS

Pol Jean Limbough, Lillois-Witterzeel, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.

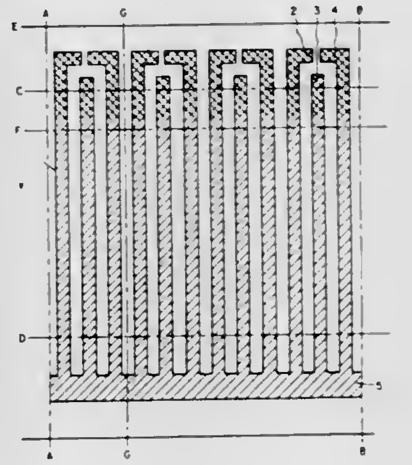
Original application June 20, 1967, Ser. No. 647,466. Divided and this application June 11, 1970, Ser. No. 57,876

Claims priority, application Netherlands, June 23, 1966, 6608701

Int. Cl. B44d *1/18*

U.S. Cl. 117—212 **2 Claims**

A method of mass producing miniaturized electrical circuits provided with supply conductors. A plate carrier is coated with a layer of electrically resistant material and then a first conductive layer is deposited on the coated plate carrier to form an electrode pattern; a second conductive layer is deposited over the carrier and electrode pattern and etched to form a supply conductor pattern, subsequently the conductor pattern is reinforced electrolytically and then the carrier is separated from these portions of second layer thus forming the supply conductors.



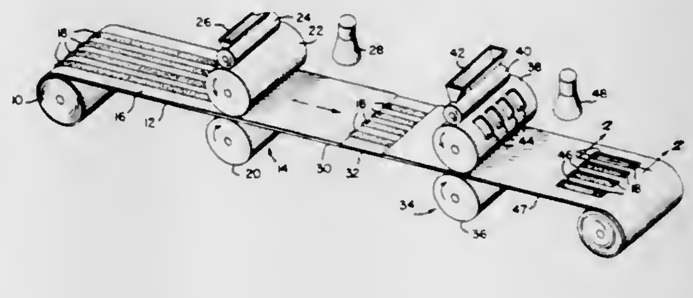
3,704,164
PRINTED CIRCUITRY

Lawrence R. Travis, Brockton, Mass., assignor to Electro Connective Systems, Inc., Brockton, Mass.

Filed June 19, 1968, Ser. No. 738,144

Int. Cl. B44d *1/18, 1/02*

U.S. Cl. 117—212 **4 Claims**



Apparatus for and a method of producing indefinite lengths of flexible flat circuitry, such as flexible flat cable having one or more electrical conductors forming circuit paths between two insulatory layers with openings in predetermined locations of one insulatory layer for attachment of terminals, etc. A sheet of insulatory material having flat electrical conductors on one of its surfaces is passed through one coating station at which a layer of insulatory material is applied to selected lengths of the circuitry. The sheet is also passed through another coating station at which insulatory material is applied to other lengths of the circuitry at which insulation is desired, leaving uncoated selected locations of the conductor to provide openings for attachment of connectors and other terminating and interconnecting devices.

3,704,165

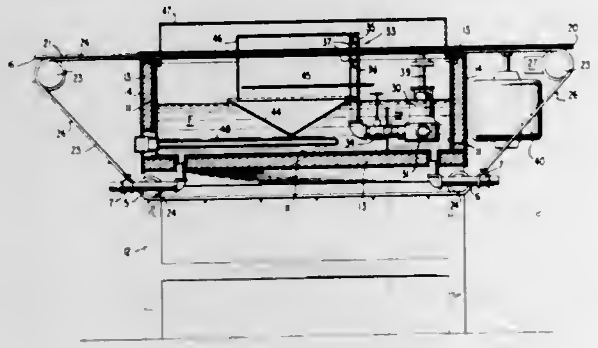
SOLDER LEVELING METHOD

John H. McLain, Huntsville, and Bobby J. Porter, Madison, Ala., assignors to Brown Engineering Company, Inc., Huntsville, Ala.

Original application July 6, 1967, Ser. No. 651,417, now Patent No. 3,491,779, dated Jan. 27, 1970. Divided and this application Nov. 12, 1969, Ser. No. 871,273

Int. Cl. B41m *3/08;* **B44d** *1/44;* **H05k** *3/22*

U.S. Cl. 117—212 **9 Claims**



This invention, relating to a method for establishing a level coating of solder of uniform thickness on metallic surfaces such as the circuitry of printed circuit boards, utilizes a tank containing a volume of fluid maintained at a temperature substantially above that of the melting point of the solder with a conveyor carrying the metallic surfaces, such as printed circuit boards, across the top of the tank and a pump submerged in the hot fluid directing a converging spray of hot fluid at an acute angle onto both sides of the metallic surfaces opposite their direction of motion as they pass across the top of the tank. Oil or a molten salt is utilized as the fluid.

3,704,166

METHOD FOR IMPROVING ADHESION BETWEEN CONDUCTIVE LAYERS AND DIELECTRICS

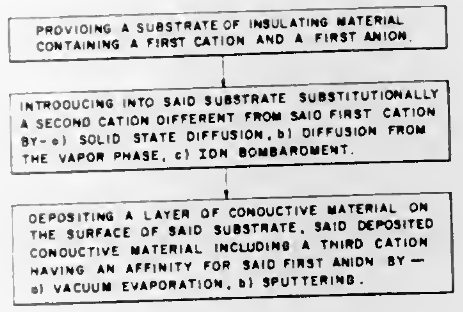
Jerome J. Cuomo, New York, Ashok F. Mayadas, Somers, and Robert Rosenberg, Peekskill, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1969, Ser. No. 837,779

Int. Cl. B44d *1/18*

U.S. Cl. 117—217 **11 Claims**

A method for improving adhesion between a conductive layer and a substrate of insulating material is taught which includes the steps of providing a substrate of insulating material such as silicon dioxide which contains a first cation and a first anion. A second cation such as aluminum is introduced into the substrate substitutionally by diffusion or ion bombardment. Finally, a layer of conductive material is deposited on the surface of the substrate by vacuum evaporation or sputtering. The conductive material includes a third cation such as tungsten which has an affinity for the first anion. The introduction of the second cation is carried out in only the surface layers of the substrate such that dielectric characteristics of the substrate are substantially unaffected. The invention basically teaches providing sites, in an insulating substrate, containing unbound atoms which are capable of chemically bonding with the deposited conductive material thereby obtaining improved adhesion at low temperature (e.g. at temperatures of 500° C. and below for W or Mo, whereas without the sites provided, poor adhesion would take place below 500° C.).


PROVIDING A SUBSTRATE OF INSULATING MATERIAL CONTAINING A FIRST CATION AND A FIRST ANION.
INTRODUCING INTO SAID SUBSTRATE SUBSTITUTIONALLY A SECOND CATION DIFFERENT FROM SAID FIRST CATION BY— a) SOLID STATE DIFFUSION, b) DIFFUSION FROM THE VAPOR PHASE, c) ION BOMBARDMENT.
DEPOSITING A LAYER OF CONDUCTIVE MATERIAL ON THE SURFACE OF SAID SUBSTRATE, SAID DEPOSITED CONDUCTIVE MATERIAL INCLUDING A THIRD CATION HAVING AN AFFINITY FOR SAID FIRST ANION BY— a) VACUUM EVAPORATION, b) SPUTTERING.

3,704,167

PROCESS FOR MANUFACTURING PHOTOGRAPHIC FILM HAVING A MAGNETIC RECORDING STRIPE

Nobuo Yamamoto and Hideo Kawaguchi, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed June 11, 1971, Ser. No. 152,423

Claims priority, application Japan, June 11, 1970, 45/50,563

Int. Cl. H01f *10/00;* **G03c** *1/84*

U.S. Cl. 117—239 **18 Claims**

An improvement in a process for manufacturing a photographic film with a magnetic recording stripe wherein a dispersion of magnetic material is coated on an antihalation layer of the light-sensitive photographic film using as the support polyethylene terephthalate. The improvement comprises either adding a compound having at least two aziridine rings into the dispersion and then coating the dispersion on the antihalation layer, or by first treating the antihalation layer with a solution containing a compound having at least two aziridine rings and then coating the dispersion on the antihalation layer thus obtained.

3,704,168

PROCESS FOR THE CRYSTALLIZATION OF GLUCOSE, FRUCTOSE, OR MIXTURE OF GLUCOSE AND FRUCTOSE

Kazuo Hara and Mistunobu Samoto, Yokohama, Masanobu Sawai, Yamato, and Shiro Nakamura, Tokyo, Japan, assignors to Teikoku Hormone Mfg. Co., Ltd., Tokyo, and Japan Chemurgy Co., Ltd., Yokohama, Japan

No Drawing. Filed June 2, 1970, Ser. No. 48,542

Claims priority, application Japan, June 27, 1969, 44/50,388

Int. Cl. C13f *1/02, 1/06, 1/12*

U.S. Cl. 127—58 **11 Claims**

A process for the crystallization of glucose, fructose, or a mixture of the two, which is characterized in that the crystallization is performed in the presence of a combination medium of a liquid polyhydric alcohol and liquid monohydric alcohol as the crystallization medium.

3,704,169

DRYING OF SUGAR SOLUTIONS

Edward T. Woodruff, Woodbine, Md., and Viggo S. Andersen, Hackettstown, N.J., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed May 3, 1971, Ser. No. 139,852

Int. Cl. C13f *1/02*

U.S. Cl. 127—62 **8 Claims**

In a process for continuously preparing dried, solid, sucrose-containing products from a sucrose-containing solution by drying droplets of the said solution in a current of heated air and in the presence of separately introduced recycled dried product solids, the improvement comprising continuously controlling the average particle size of the recycled product below about 200 microns.

3,704,170

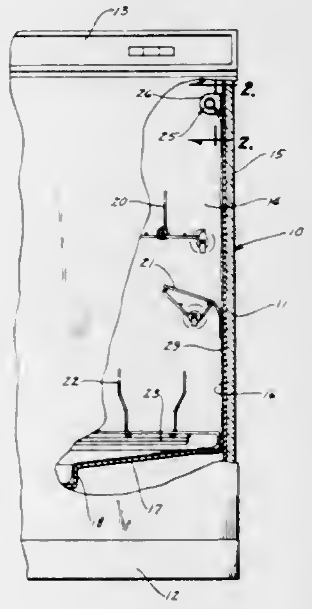
DISHWASHER CONDENSER SYSTEM

William G. Landwier, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Continuation of abandoned application Ser. No. 739,558, June 24, 1968. This application Nov. 16, 1970, Ser. No. 90,062

Int. Cl. B08b *3/02*

U.S. Cl. 134—25 A **2 Claims**



Dishwashing apparatus is provided with a cold water supply conduit so that an inside wall can be kept wet with a cold water film during the drying portion of the cycle in order to condense the water evaporated from the dishes.

3,704,171

CATALYTIC MEMBRANE AIR ELECTRODES FOR FUEL CELLS AND FUEL CELLS CONTAINING SAME

Henry Patrick Landi, Yorktown Heights, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 18, 1970, Ser. No. 38,573

Int. Cl. H01m *29/02*

U.S. Cl. 136—86 A **5 Claims**

Diffusion electrodes for fuel cells, and particularly suitable for metal-air fuel cells comprise two layers of porous sheet material laminated with a conductor screen. Both porous layers comprise polytetrafluoroethylene (PTFE) binder with partial filler of a low-melting resin incorporated to effect lamination at temperature below the sintering temperature of PTFE. One layer is a conductive porous electrode layer with fillers of carbon and silver. The other is a porous backing layer with filler of polyolefin fibers. The electrodes are especially suited as air electrodes for cells requiring low cost materials and long service life.

3,704,172

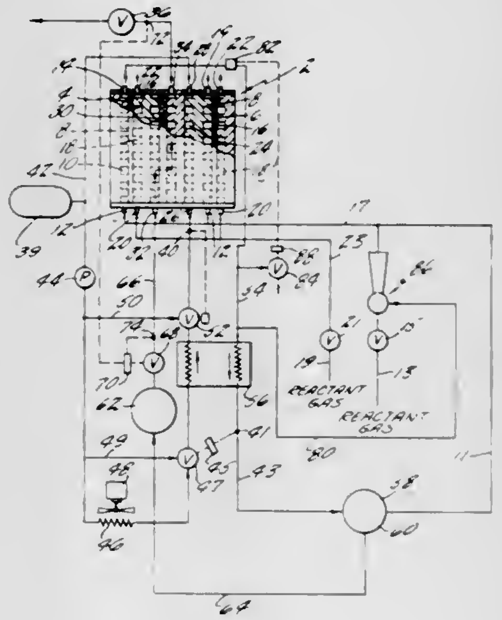
DUAL MODE FUEL CELL SYSTEM

James K. Stedman, Glastonbury, and Ronald Cohen, Newington, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 29, 1971, Ser. No. 128,774

Int. Cl. H01m *27/12*

U.S. Cl. 136—86 C **6 Claims**



A dual mode fuel cell system is provided by the combination of a fuel cell power section with separate waste heat and electrolyte diluent removal subsystems for open cycle operation and for closed cycle operation.

3,704,173

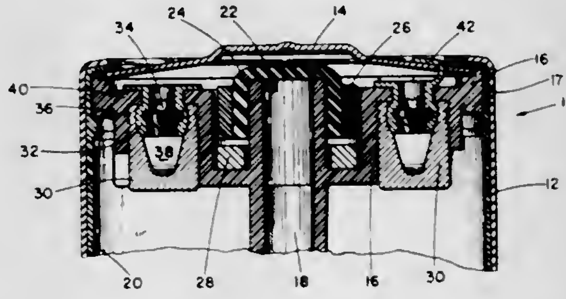
TERMINAL SEAL ELECTROCHEMICAL DEVICE

Donald H. McClelland, 6160 Rosewood Drive; and Herbert G. Pankow, 6017 S. Elizabeth Way, both of Littleton, Colo. 80121; and Edward O. Wolcott, 8425 W. 3rd Place, Denver, Colo. 80226

Filed Oct. 7, 1970, Ser. No. 90,178

Int. Cl. H01m *1/02*

U.S. Cl. 136—135 R **18 Claims**

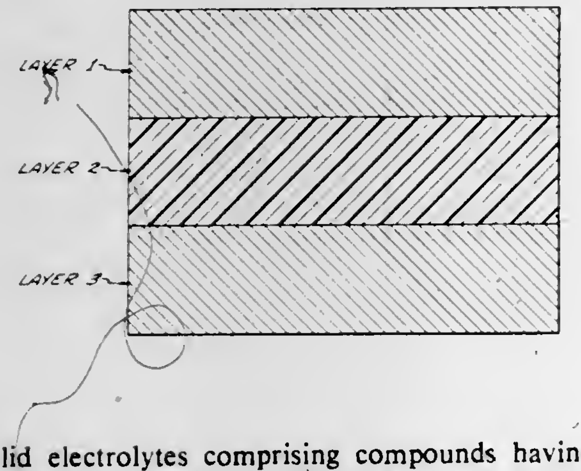


An electrochemical device having a resilient, electrolyte resistant inner lining and top (e.g. of plastic) and connections between the electrodes of the device through the inner top to the device terminals which are sealed by a compression fit between the terminal connecting post and resilient inner top. A hole or port in the resilient member at the point of connection carries the terminal connecting post which consists of a hollowed-out deformable electrical conductor (e.g. of lead). This deformable post is made to expand against the plastic lining to form a liquid seal compression fit. The expansion may be provided, inter alia, by an externally expanded rivet or by the action of a self tapping screw. This seal has particular utility in sealed or resealably safety valved battery and other electrolytic cells.

3,704,174

SOLID ELECTROLYTE DEVICE

Carl Berger, 13401 Kootenay Drive,
Santa Ana, Calif. 92705
Filed June 7, 1971, Ser. No. 150,573
Int. Cl. H01m *43/06*
U.S. Cl. 136—153 **10 Claims**

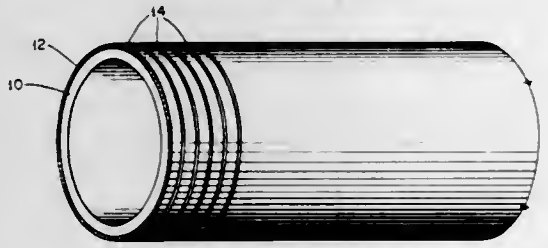


Solid electrolytes comprising compounds having high electrolytic conductivity, wherein the compounds are complexes of salts combined with macrocyclic polyethers. Such electrolytes can be employed in electrolytic devices such as batteries or coulometric devices such as timers. Moreover they may be employed as separators in electrolytic systems, aqueous and nonaqueous; applications in electrodialysis and reverse osmosis are also feasible. The solid electrolytes of this invention represent a substantial advance in applicability and cost compared to presently available solid electrolytes.

3,704,175

ELECTROFORMING JOINTLESS METAL BELT

John J. MacKinney, Narberth, Pa., assignor to The Budd Company, Philadelphia, Pa.
Filed Feb. 1, 1971, Ser. No. 111,215
Int. Cl. C23b *7/02, 5/56*
U.S. Cl. 204—9 **1 Claim**

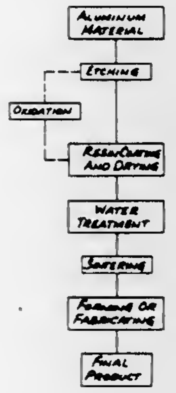


A method of forming a thin metallic endless belt includes the steps of electrodepositing metal on a mandrel, cutting the electrodeposited material into segments and removing the segments from the mandrel.

3,704,176

METHOD OF RESIN COATING A METAL AND RESIN-COATED METAL PRODUCT THEREOF

Toshisaburo Oga, Kobe, and Ken Okazaki, Amagasaki, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Original application Oct. 4, 1966, Ser. No. 584,223, now Patent No. 3,563,785, dated Feb. 16, 1971. Divided and this application Feb. 24, 1970, Ser. No. 13,473
Claims priority, application Japan, Oct. 9, 1965, 40/61,681; Nov. 27, 1965, 40/72,577, 40/72,578; Sept. 17, 1966, 41/61,596; Sept. 22, 1966, 41/62,764
Int. Cl. C23f *7/06*
U.S. Cl. 148—6.27 **9 Claims**

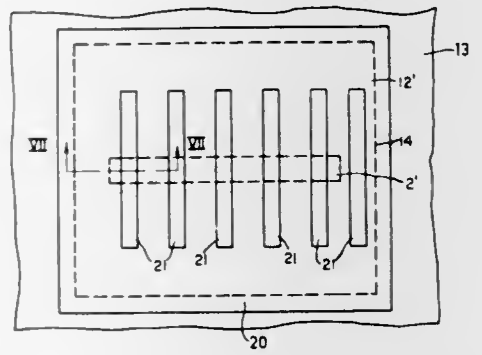


The method of coating an aluminum or aluminum alloy surface with a resin wherein the surface is anodically etched in a halide solution to provide minute surface irregularities and cavities to adequately anchor the resin to be applied. The etched surface may be oxidized to provide greater anchorage and may also be heat treated with hot water or steam either prior or subsequent to resin coating to further enhance the resin bondage and service life.

3,704,177

METHODS OF MANUFACTURING A SEMICONDUCTOR DEVICE

Julian Robert Anthony Beale, Reigate, England, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 15, 1970, Ser. No. 98,320
Claims priority, application Great Britain, Dec. 18, 1969, 61,729/69; Oct. 28, 1970, 61,729/70
Int. Cl. H01l *7/54*
U.S. Cl. 148—1.5 **11 Claims**

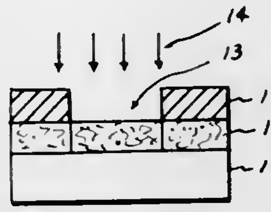


A method for making a high-frequency bipolar transistor is described. The method employs selective ion implantation to form highly conducting mutually spaced stripe portions in the base region of the transistor. The stripe portions may be formed directly below and spaced from the emitter region. A heavy metal mask defined by electron-resist methods may be provided at least in the emitter window to selectively mask against the implantation.

3,704,178

PROCESS FOR FORMING A P-N JUNCTION IN A SEMICONDUCTOR MATERIAL

Bryan H. Hill, Dayton, Ohio
(2525 Stewart Road, Xenia, Ohio 45385)
Filed Nov. 5, 1969, Ser. No. 874,196
Int. Cl. H01l *7/54*
U.S. Cl. 148—1.5 **6 Claims**



A solid body of a first conductivity type has a passivating oxide layer formed on one of its surfaces; a mask having an opening therein is provided over the layer; the opening is exposed to ion radiation so as to implant ions in the oxide layer; and the solid body is heated, thereby driving ion dopants from the oxide layer into the body and providing a region therein having a conductivity opposite the first conductivity type.

3,704,179

PROCESS FOR IMPROVING THERMO RESPONSE CHARACTERISTICS OF THERMOSTAT METAL ELEMENTS

Henry Ty and Joseph Luerken, Attleboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.
No Drawing. Filed Aug. 3, 1970, Ser. No. 60,635
Int. Cl. C23c *1/10;* **C23f** *7/04*
U.S. Cl. 148—6.17 **4 Claims**

A process for improving the heat-absorbing properties of thermostat metal elements is shown to include controlled tumbling of the elements with selected abrasives followed by controlled etching of the elements with selected etchants for increasing and blackening the surface areas of the elements in a uniform and reproducible manner without deleteriously altering other properties of the elements.

3,704,180

METHOD FOR PRODUCING TOUGH, HIGH STRENGTH STEEL ARTICLE

William E. Heitmann, Dolton, Ill., and Frank Garofalo, Munster, Ind., assignors to Inland Steel Company, Chicago, Ill.
No Drawing. Original application Aug. 28, 1968, Ser. No. 755,769, now Patent No. 3,562,028, dated Feb. 9, 1971. Divided and this application June 2, 1970, Ser. No. 54,088
Int. Cl. C21d *7/14*
U.S. Cl. 148—12 **5 Claims**

Steel article, such as plate, having a relatively high yield strength, e.g. 70,000 p.s.i., together with a relatively high impact resistance, e.g. 15 foot-pound Charpy V-notch impact transition temperature in the range —50° to 100° F. or lower. Microstructure is ferrite plus pearlite. Ferritic grain size is 9.5 ASTM or finer. Composition, in wt. percent:

Carbon	0.02–0.26
Manganese	1.25–1.75
Silicon	0.75–1.5
Nitrogen	0.003–0.015
Aluminum	0.01–0.08
Vanadium	0–0.07
Columbium	0–0.03
Tungsten	0–0.1

Article is hot rolled with at least 25% deformation at finishing temperature above A_1 to give microstructure containing fine grained austenite (9.5 ASTM or finer). Cooling is rapid but controlled to avoid low temperature transformation products in microstructure. Normalizing optional.

3,704,181

COLD ROLLED STEEL SHEET HAVING STABILIZED THIN OXIDE FILM AND HAVING EXCELLENT RESISTANCE AGAINST CORROSION PARTICULARLY INITIAL RUST FORMATION AS WELL AS AGAINST CORROSION AFTER LACQUERING

Toshiro Nishihara, Hidejiro Asano, Shigeyoshi Maeda, and Yashichi Oyagi, Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed May 19, 1970, Ser. No. 38,827
Claims priority, application Japan, May 28, 1969, 44/41,464; Jan. 23, 1970, 45/5,717
Int. Cl. C22c *39/54*
U.S. Cl. 148—31.5 **3 Claims**

A cold rolled steel sheet containing as a basic components C≤0.12%, Mn 0.10–1.00%, Si≤0.15%, Cu 0.01–0.20%, Sb 0.01–0.20% and containing in case of necessity a small amount of Zr, Mo, and Ni, which steel sheet has excellent resistance against corrosion, particularly initial rust formation as well as corrosion after lacquering and provides high corrosion resistant material suitable for cans when the ratio of S to P is more than 1.

3,704,182

NICKEL-CHROMIUM-BERYLLIUM ALLOY

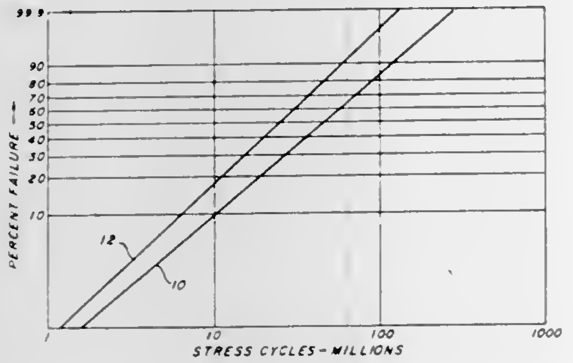
Leonard B. Griffiths and Yuan-Shou Shen, North Reading, Mass., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.
Continuation-in-part of application Ser. No. 793,814, Jan. 24, 1969. This application June 11, 1969, Ser. No. 832,335
Int. Cl. C22c *19/00*
U.S. Cl. 148—32 **8 Claims**

This invention relates to a nickel-chromium-beryllium alloy having a microstructure which provides obstacles to plastic flow in the nickel rich matrix phase so that high strength properties are obtained at both room and elevated temperatures. The alloy may also contain other additives including aluminum and/or titanium together with hardeners including molybdenum and/or tungsten, with or without carbon. A method of processing the alloy comprises: melting the alloying ingredients in a crucible while avoiding the presence of oxygen; raising the temperature to 1450 to 1550° C.; casting the alloy in a mold. The alloy may be remelted and cast in an apparatus to effect abstraction of heat from the casting from one direction only to obtain a directionally orientated microstructure.

3,704,183

METHOD FOR PRODUCING A LOW-COST HYPEREUTECTOID BEARING STEEL

Charles P. Weigel, Canton, Ohio, assignor to The Timken Company, Canton, Ohio
Filed May 26, 1971, Ser. No. 146,911
Int. Cl. B22d *25/00;* **C21d** *7/14*
U.S. Cl. 148—126 **2 Claims**



Method for producing a low-cost hypereutectoid bearing steel having characteristics equal to or superior to higher priced steels of this type and containing as essential alloying additions .80–1.10% carbon, .50–1.00% manganese, .20–.60% chromium and .05–.25% molybdenum. A steel of this type, usually in the form of wire, rod, bar, forgings, rings or tubing, is annealed at a maximum temperature of 1400° F. for thirteen hours to produce an annealed microstructure comprising spheroidized carbides in a matrix of ferrite. After forming into bearing races or balls, the formed product is quenched from 1550° F. and thereafter tempered to produce a steel having a Rockwell C hardness of about 60 or greater and excellent fatigue strength.

3,704,184

ISOPYCNIC SLURRY FORMULATIONS

Donald K. Kuehl, Manchester, Conn., Arthur W. Blackman, Cambridge, Mass., and Irvin Glassman, Princeton, N.J., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Oct. 22, 1965, Ser. No. 501,721
Int. Cl. C06b *15/00, 19/02*
U.S. Cl. 149—1 **3 Claims**

The invention relates to slurry of a finely divided metal of a density substantially equal to a combustible liquid carrier. The metal may be in the form of hollow spheres containing lithium and low density metal hydrides or pentaborane, hydrazine, ethanol, water, nitrogen tetroxide and hydrogen peroxide. The combustible liquid carrier may include kerosene type fuels, hydrazine and pentaborane or liquid oxidizer carriers such as hydrogen peroxide, liquid oxygen, chlorine trifluoride and nitrogen tetroxide. These slurries are useful as liquid propellants or fuels.

3,704,185

PROGRESSIVE BURNING SMOKELESS POWDER COATED WITH AN ORGANIC ESTER

William W. Cooner, Wenonah, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Mar. 1, 1965, Ser. No. 437,632
Int. Cl. C06b *19/02*
U.S. Cl. 149—11 **7 Claims**

Progressive burning smokeless powder coated with water insoluble organic ester melting below about 35° C. and boiling above about 200° C. in which nitrocellulose has a specific solubility.

3,704,186

PRIMARY EXPLOSIVE COMPOSITIONS FOR EXPLOSIVE BONDING OR FORMING

Terri Giversen Steele, Hamilton Township, Mercer County, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.
No Drawing. Filed Aug. 23, 1971, Ser. No. 174,194
Int. Cl. C06c *1/02*
U.S. Cl. 149—35 **10 Claims**

A screenable primary explosive composition for explosive bonding or forming consists of 60–70 percent by weight of colloidal lead azide, and the balance a vehicle having (1) approximately 92 percent by weight of beta-terpineol and approximately 8 percent by weight of ethyl cellulose, or (2) approximately 90 percent by weight of beta-terpineol and approximately 10 percent by weight of polyvinyl butyral, or (3) approximately 92 percent by weight of pine oil and approximately 8 percent by weight of ethyl cellulose. Where difficulty is encountered in mixing the lead azide in the higher weight percentage with the vehicle, particularly where the vehicle consists of beta-terpineol and ethyl cellulose, the lead azide may be moistened with a small amount of nitrocellulose (e.g. 0.05 ml. nitrocellulose/gm. lead azide and vehicle) to facilitate mixing with the vehicle.

3,704,187

PYROTECHNIC DISSEMINATING COMPOSITION

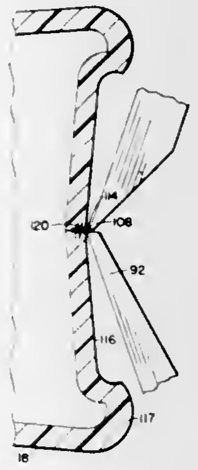
Alan C. Kott, Mount Pleasant, and Erwin M. Jankowiak and George A. Lane, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Sept. 1, 1967, Ser. No. 667,043
Int. Cl. C06b *1/04*
U.S. Cl. 149—60 **6 Claims**

A pyrotechnic disseminating formulation comprising an inorganic oxidizer which readily is combustible at atmospheric pressure, an epoxy resin binder as fuel and an effective quantity of an agent to be disseminated.

3,704,188

TRIMMING FLASH WITH ULTRASONIC TOOL

Richard MacDuff, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.
Filed Dec. 30, 1970, Ser. No. 102,693
Int. Cl. B29c *27/08;* **B32b** *31/18*
U.S. Cl. 156—73 **3 Claims**

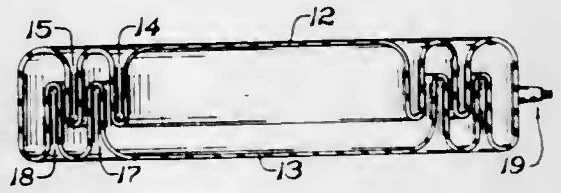


The invention is concerned with trimming the flash from a pinch area in a recessed portion in the bottom of a thermoplastic container which is connected to a chain of containers each of which is attached to each other by the flash. The trimming is effected by moving and vibrating the cutting edge of an ultrasonic horn into contact with the pinch and cutting through the pinch while the container is loosely supported.

3,704,189

METHOD OF MAKING A JACK

Richard S. Varga, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed July 6, 1971, Ser. No. 159,683
Int. Cl. B29c *27/28*
U.S. Cl. 156—69 **5 Claims**

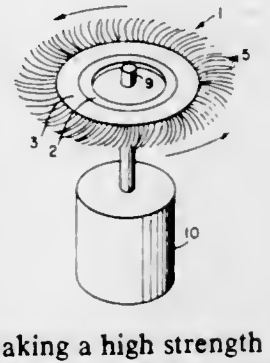


An improved method for making an inflatable pneumatic bag jack in the form of a cylindrical bag of impervious flexible elastomeric material of a diameter several times its axial collapsed length wherein annular corrugations are in the flat end faces immediately inside the periphery.

3,704,190

METHOD OF MAKING A HIGH STRENGTH FITTING FOR A FLEXIBLE WALL CONTAINER

Robert W. Bucher, Glendale, Ariz., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed July 19, 1971, Ser. No. 163,854
Int. Cl. B32b *31/18*
U.S. Cl. 156—74 **6 Claims**



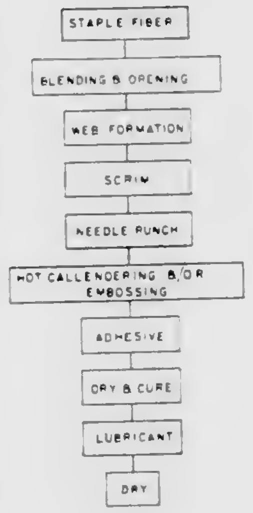
A method of making a high strength fitting for a flexible wall container such as a fuel tank or the like comprising the steps of inserting flexible strands or cords through holes in a rigid ring member, rotating the ring member to orient the strands in a radially outwardly extending position, positioning binder layers adjacent the strands, applying pressure to embed the strands in the binder and trimming the radially outer edge of the assembled part.

3,704,191

NON-WOVEN PROCESS

Francis M. Buresh, N. Jay Road, Au Sable Forks, N.Y. 12912; Stanley M. Nisenson, 8855 Bay Parkway, Brooklyn, N.Y. 11214; Walter P. Lipscomb, 12300 Winfree St., Chester, Va. 23831; and Anthony M. Saich, 806 Forest View Drive, Colonial Heights, Va. 23834
Filed Dec. 1, 1969, Ser. No. 881,038
Int. Cl. B32b *31/12*
U.S. Cl. 156—148 **9 Claims**

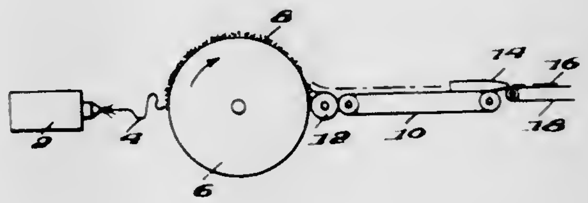
A process for making non-woven nylon carpet backing for either tufted or needle-punched carpets, comprising the steps of forming nylon web and bonding the same together with an open filament yarn base, by a combination of mechanical entanglement, selective heat treatment, and a binder, as described hereinafter.



3,704,192

PROCESS OF MAKING TOBACCO SMOKE FILTERS FROM EXTRUDED POLYMER AND BINDER

John William Soehngen and William Sherwood Wagner, Berkeley Heights, Saunders Eliot Jamison, Summit, and Dale Kelley Canfield, Chatham, N.J., assignors to Celanese Corporation
Original application Sept. 21, 1966, Ser. No. 580,993, now Patent No. 3,444,863, dated May 20, 1969. Divided and this application Feb. 6, 1969, Ser. No. 835,827
Int. Cl. D04h *3/16*
U.S. Cl. 156—167 **6 Claims**



Cigarette filters are prepared from a random array of continuous spray-spun synthetic filamentary material, the filaments of said filamentary material varying in diameter with the periodicity characteristics of the filament being such that the change in diameter occurs over a relatively long distance along the filament length.

3,704,193

METHOD OF STRAIN-HARDENING FOAMED METAL

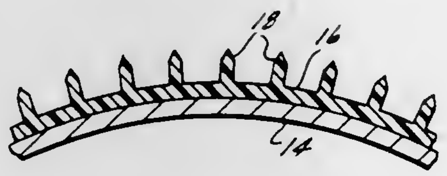
Alex R. Valdo and Jerry M. Janes, Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.
No Drawing. Filed Oct. 5, 1970, Ser. No. 78,214
Int. Cl. C22f *1/04;* **B32b** *3/26, 15/00*
U.S. Cl. 156—196 **20 Claims**

Foamed metals and foam metal laminates having greater strength are produced by strain-hardening the foamed metal to improve its strength and to provide a smooth surface for producing laminates having greater resistance to delamination.

3,704,194

PERFORATED REINFORCED PLASTIC MEMBER AND METHOD FOR MAKING

Stanley C. Harrier, Cincinnati, Ohio, assignor to General Electric Company
Filed July 2, 1970, Ser. No. 51,991
Int. Cl. B28b *7/30;* **B29b** *19/00*
U.S. Cl. 156—245 **4 Claims**

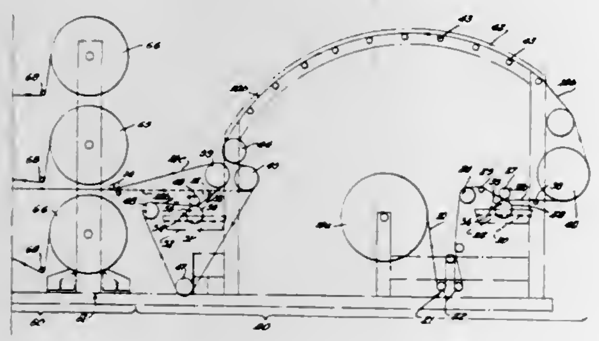


Perforations in reinforced, plastic members are provided by first pressing a partially cured sheet, or series of sheets, over spaced apart, pointed, studs projecting from a mold surface portion. The sheet is then cured while pressed on the mold surface. In one form of the method, the studs are at least partially elastic and the sheet, after curing, is removed from the studs. In another form, the studs are hollow and, when the projecting tips are cut away, perforations remain.

3,704,195

APPARATUS FOR THE CONTINUOUS IN-LINE PRODUCTION OF MULTI-LAYERED PRODUCT UNITS

Earl W. Zitzler, Park Ridge, and John Ideboen, Mount Prospect, Ill., assignors to Colonial Carbon Company, Des Plaines, Ill.
Filed Aug. 11, 1969, Ser. No. 849,063
Int. Cl. B32b *31/12*
U.S. Cl. 156—250 **14 Claims**



Packages of predetermined numbers of reproduction product units of consistently high quality are produced from continuous web stock material in a continuous in-line process and apparatus. In the apparatus a continuous web of coating stock proceeds through a tensioner system, thence through a first coating means, thence through a conditioning means including a tempering roller, conditioning or drying arch and chilling drive rollers, thence through a second coating means, thence between vertically aligned continuous component strips, thence through a web guide section which controls the web tension and vertical alignment, thence about a series of rollers including an assembly roller and rotating cutting head to a delivery or packaging section where the cut product units are counted and packaged. The method includes the steps of relieving the residual stresses in a continuous strip of stock material, pre-heating the strip, coating the strip, tempering the strip, conditioning the strip, chilling the strip, optionally coating the strip a second time on the same side as the first coating, feeding the coated strip between continuous strips of component elements of the final product unit, gluing, imprinting and perforating the various components of the final product unit and assembling the components to provide a continuous assembled strip, cutting the strip into predetermined lengths and packaging the cut product units in predetermined numbers.

3,704,196

SELF-CURING SEALANT COMPOSITIONS

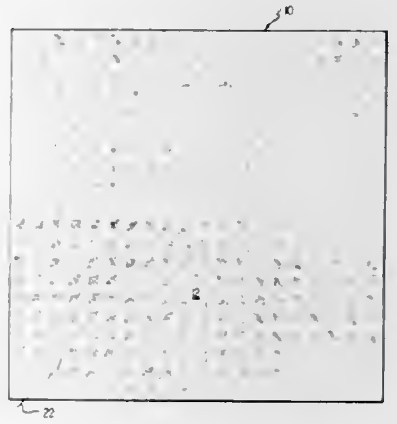
John E. Callan, Trenton, N.J., assignor to Cities Service Company, New York, N.Y.
No Drawing. Filed Dec. 22, 1969, Ser. No. 887,402
Int. Cl. B29c *27/30;* **C09k** *3/10*
U.S. Cl. 156—306 **7 Claims**

Tapes for sealing windows in automotive and architectural applications are formulated from butyl rubber, a plasticizer and carbon black. Minor amounts of resorcinol, a formaldehyde donor and a silica filler are also included in the formulation to provide a self-curing tape which slowly vulcanizes in service and which is characterized by excellent bond strength and low heat flow.

3,704,197

REMOVABLE FLOOR COVERING

Jurgen F. Bahlo, Cherry Hill, N.J., assignor to General Felt Industries, Inc., Saddle Brook, N.J.
Filed Apr. 5, 1971, Ser. No. 131,019
Int. Cl. B32b *3/06, 7/14*
U.S. Cl. 161—67 **14 Claims**



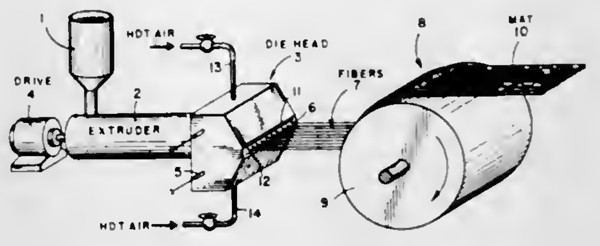
An adhesive backed removable carpet tile comprising a foam backing and a carpet layer is disclosed which may be applied to a subfloor and subsequently removed therefrom without delaminating the foam backing. The adhesive provides a release strength lower than the delamination strength of the foam backing. To provide the proper release strength, the adhesive is applied to the foam backing by a figurated roller to cover between 10 and 50 percent of the foam backing.

3,704,198

NONWOVEN POLYPROPYLENE MATS OF INCREASED STRIP TENSILE STRENGTH

James S. Prentice, Baytown, Tex., assignor to Esso Research and Engineering Company
Filed Oct. 9, 1969, Ser. No. 865,089
Int. Cl. D04h *3/14*
U.S. Cl. 161—148 **7 Claims**

The strip tensile strength of nonwoven mats of polypropylene fibers having a diameter from about 1 to about 10 microns is increased, for example, to strengths greater than 4000 m., by fuse-bonding, as by calendering or point-bonding, at least a portion of the fibers of the mat at temperatures within the range from about 250° F. to about 325° F., preferably, from about 280° F. to about 315° F., while the mat is subjected to pressure sufficient to prevent shrinkage of the fibers in the mat.



3,704,199

PRODUCTION OF COATED FIBERS AND COATING COMPOSITION

Clayton A. Smucker, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation

No Drawing. Continuation of application Ser. No. 329,250, Dec. 9, 1963, which is a continuation-in-part of application Ser. No. 23,389, Nov. 8, 1963, and a continuation-in-part of application Ser. No. 853,438, Nov. 17, 1959, all now abandoned. This application Jan. 4, 1971, Ser. No. 103,926

Int. Cl. D04h *3/12*
U.S. Cl. 161—157 **3 Claims**

Glass fiber thermal or acoustical insulating material and method for production thereof. Glass fibers are deposited with a binder on a conveyor and conveyed through an oven where the binder is cured. The mass of fibers and binder is compressed, if required, to provide a desired apparent density. The binder is a phenol formaldehyde condensate produced using barium hydroxide as a condensing agent; after condensation, the barium hydroxide is converted to barium sulfate particles in the size range of from 1 millimicron to 1 micron. The barium sulfate particles remain suspended in the resin, become a part of the binder composition, and are distributed throughout the binder in the final product. Their presence facilitates binder flow in the glass fiber process and improves the strength of the final product.

3,704,200

CONDENSATION RESINS FROM ALDEHYDES, POLYNUCLEAR CATECHOL AND RESORCINOL

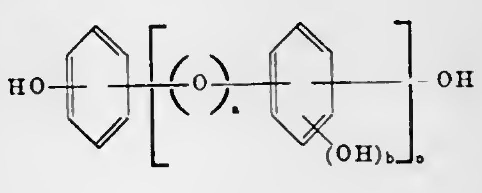
Frederick L. Brown, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 739,754, June 25, 1968. This application May 19, 1970, Ser. No. 36,692

Int. Cl. C08g *5/10*
U.S. Cl. 161—262 **12 Claims**

Resins which are the reaction product of an aldehyde and

(A) at least one polyhydric, polynuclear compound of the formula:



wherein a is 0 or 1, b is 0 or 1, $a+b$ equals 1, and n is an integer from 1 to 4, inclusive; and

(B) 10 to 80 weight percent, based on the combined weight of A and B, of catechol and resorcinol wherein the weight ratio of catechol to resorcinol is 25:100 to 85:100, are disclosed.

These resins are admixed with aldehyde-containing hardeners, resins of catechol-resorcinol mixtures below the stated ratio, resins of catechol alone, or resins of resorcinol to prepare resins which cure in a short time and which are useful as adhesives such as in the manufacture of plywood. The resins exhibit fast cure and good shelf-life.

3,704,201

METHOD OF MAKING LIGNIN CONTAINING GROUNDWOOD BY HYDROLYSIS AND ALKALI TREATMENT OF WOOD CHIPS

Olavi Erland Helasti, Pyhan Laurintie, Helsinki, Finland

No Drawing. Filed Mar. 11, 1970, Ser. No. 18,718

Int. Cl. D21c *3/26*
U.S. Cl. 162—19 **2 Claims**

A method for making groundwood from wood chips. The wood chips are subjected to hydrolysis which removes most of hemicellulose from the wood but leaves intact most of the lignin. The resulting product is neutralized and treated with alkali and then refined and washed.

3,704,202

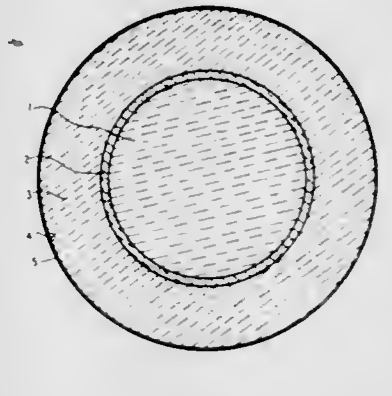
FUEL ELEMENT FOR HIGH TEMPERATURE NUCLEAR REACTOR

Keith Desmond Reeve, Caringbah, New South Wales, and Eric John Ramm, Lilli Pilli, New South Wales, Australia, assignors to Australian Atomic Energy Commission, Coogee, New South Wales, Australia

Filed May 5, 1970, Ser. No. 34,803

Claims priority, application Australia, May 5, 1969, 54,403/69

Int. Cl. G21c *3/20*
U.S. Cl. 176—68 **1 Claim**



A substantially spherical fuel element for nuclear reactors comprises a core containing a finely divided solid solution of fuel dispersed in a fine grained beryllia matrix, a dense outer shell of fine grained beryllia, a buffer zone of porous beryllia between said core and said shell, a dense outer coating of alumina on said outer shell and a thin layer of crysoberyl as a bond between the alumina coating and said shell.

3,704,203

TRANSMISSIBLE GASTROENTERITIS VACCINES AND METHODS OF PRODUCING THE SAME

Clarence J. Welter, Des Moines, Iowa, assignor to Diamond Laboratories, Inc., Des Moines, Iowa

No Drawing. Application July 14, 1969, Ser. No. 841,607, now Patent No. 3,585,108, which is a division of application Ser. No. 671,526, Aug. 24, 1967, now Patent No. 3,479,430. Divided and this application Nov. 18, 1970, Ser. No. 90,850

Int. Cl. A61k *23/00;* **C12k** *7/00*

U.S. Cl. 195—1.3 **3 Claims**

Transmissible gastroenteritis virus is grown and propagated in tissue cultures by inoculating virulent virus particles into a first tissue culture, allowing the virus to grow, introducing the viral particles into other tissue cultures until a continuated virus is obtained. A final virus culture can be harvested and combined with a stabilizer and further incubated to inactivate the virus. Sows and their nursing pigs can be immunized by injecting into the pregnant sow before farrowing the vaccine thus produced.

3,704,204

TEST MEDIUM AND METHOD FOR THE DETECTION OF SALMONELLA

Joseph G. Heck, Lombard, and Warner M. Hill, Downers Grove, Ill., assignors to Armour and Company, Chicago, Ill.

No Drawing. Filed Mar. 23, 1970, Ser. No. 22,002

Int. Cl. C12k *1/10*

U.S. Cl. 195—100 **10 Claims**

A test medium and method for the rapid detection of salmonellae wherein the medium provides a source of nutrients for Salmonella organisms, a fermentable carbohydrate, a substrate for the production of hydrogen sulfide gas, and selective microorganism inhibitors. Means are provided for the detection of acid production and hydrogen sulfide. A sample incubated in the medium may be declared Salmonella free after approximately 24 hours.

3,704,205

METHOD OF PRODUCING L-GLUTAMIC ACID BY FERMENTATION

Teruo Shiro, Koichi Takinami, Eiichi Akutsu, Hiroe Yoshii, and Yasutsugu Yamada, Chigasaki-shi, Kanagawa-ken, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Filed Mar. 2, 1970, Ser. No. 15,885

Claims priority, application Japan, Mar. 3, 1969, 44/16,054

Int. Cl. C12b *1/00*

U.S. Cl. 195—114 **2 Claims**

The yield of L-glutamic acid from aerobic cultures of bacteria can be increased materially by small amounts of antioxidants in the nutrient medium. Anti-foaming agents not otherwise compatible with glutamic acid cultures may be employed in the presence of the antioxidants.

3,704,206

DEVICE FOR THE DETECTION OF BACTERIA IN AQUEOUS FLUIDS

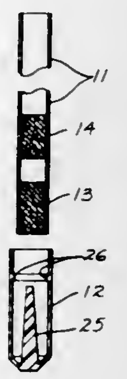
Ronald Freake, Claude Ray Gunter, Billy Harpen Haden, and Nagesh Shamrao Mhatre, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Feb. 25, 1971, Ser. No. 118,663

Int. Cl. C12k *1/04*

U.S. Cl. 195—127 **3 Claims**

A method and device for detecting bacteria in aqueous fluids is disclosed consisting essentially of a two component system, the first component comprising a stable peroxide and the second a peroxide detecting system. In use the fluid being tested is initially contacted with the first component comprising the peroxide whereby certain bacterial components, if present in the fluid, react with and degrade the peroxide. The test fluid is then contacted with the peroxide detecting system for measurement of peroxide degradation. A detected decrease in peroxide in the test fluid is indicative of the presence of bacteria therein. A preferable embodiment of the present invention comprises a unitized device wherein the two components are contained in individual matrices.



ERRATUM

For Class 204—9 see:
Patent No. 3,704,175

3,704,207

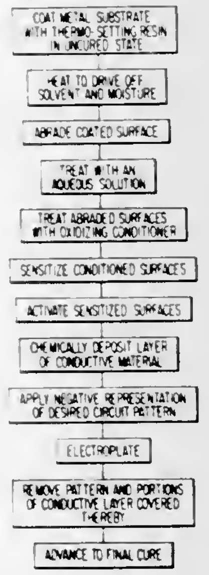
PROCESS FOR FORMING AN ISOLATED CIRCUIT PATTERN ON A CONDUCTIVE SUBSTRATE

Stokes Fenimore Burtis, Swarthmore, Pa., assignor to RCA Corporation

Filed Apr. 21, 1970, Ser. No. 30,553

Int. Cl. C23b *5/48*

U.S. Cl. 204—15 **7 Claims**


COAT METAL SUBSTRATE WITH THERMO-SETTING RESIN IN UNCURED STATE
HEAT TO DRIVE OFF SOLVENT AND MOISTURE
ABRADE COATED SURFACE
TREAT WITH AN AQUEOUS SOLUTION
TREAT ABRADED SURFACES WITH OXIDIZING CONDITIONER
SENSITIZE CONDITIONED SURFACES
ACTIVATE SENSITIZED SURFACES
CHEMICALLY DEPOSIT LAYER OF CONDUCTIVE MATERIAL
APPLY NEGATIVE REPRESENTATION OF DESIRED CIRCUIT PATTERN
ELECTROPLATE
REMOVE PATTERN AND PORTIONS OF CONDUCTIVE LAYER COVERED THEREBY
ADVANCE TO FINAL CURE

A conductive substrate is modified by the application of a thermo-seting resinous mixture such that the modified substrate may be chemically treated directly thereafter, in a specified manner, to form a printed circuit board.

3,704,208

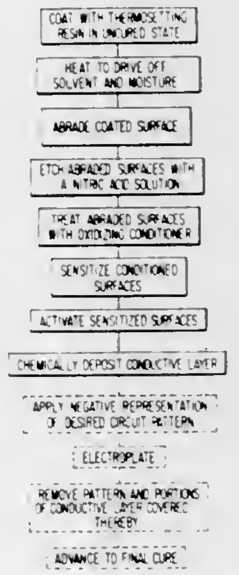
PROCESS FOR FORMING A CONDUCTIVE COATING ON A SUBSTRATE

Robert Ritter Russo, Indianapolis, Ind., assignor to RCA Corporation

Filed Apr. 21, 1970, Ser. No. 30,554

Int. Cl. C23b *5/48, 5/60*

U.S. Cl. 204—15 **16 Claims**


COAT WITH THERMOSETTING RESIN IN UNCURED STATE
HEAT TO DRIVE OFF SOLVENT AND MOISTURE
ABRADE COATED SURFACE
ETCH ABRADED SURFACES WITH A NITRIC ACID SOLUTION
TREAT ABRADED SURFACES WITH OXIDIZING CONDITIONER
SENSITIZE CONDITIONED SURFACES
ACTIVATE SENSITIZED SURFACES
CHEMICALLY DEPOSIT CONDUCTIVE LAYER
APPLY NEGATIVE REPRESENTATION OF DESIRED CIRCUIT PATTERN
ELECTROPLATE
REMOVE PATTERN AND PORTIONS OF CONDUCTIVE LAYER COVERED THEREBY
ADVANCE TO FINAL CURE

A substrate is modified by the application of a thermosetting resinous mixture such that the modified substrate may be chemically treated in a specified manner including the use of a nitric acid solution to provide, for example, a printed circuit board.

3,704,209

METHOD FOR ELECTROCHEMICAL COLORING OF ALUMINUM AND ALLOYS

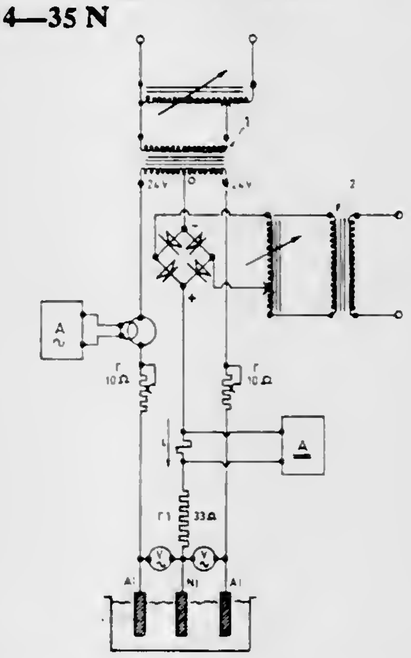
Jos Patrie, Grenoble, France, assignor to Cegedur GP

Filed July 15, 1970, Ser. No. 54,878

Claims priority, application France, July 16, 1969, 6924138

Int. Cl. C23b *9/02*

U.S. Cl. 204—35 N **12 Claims**



The coloring of oxide layers of aluminum and alloys of aluminum by immersion as an electrode in an aqueous acid bath containing a metal salt in solution and passing through the bath an alternating current superimposed by a direct current having an intensity less than the effective intensity of the alternating current.

3,704,210

PROCESS FOR COLORING ALUMINUM OBJECTS

Jos Patrie, Grenoble, France, assignor to Cegedur GP

No Drawing. Filed July 15, 1970, Ser. No. 55,295

Claims priority, application France, July 21, 1969, 6924728

Int. Cl. C23f *7/06*

U.S. Cl. 204—35 N **2 Claims**

Process for producing colored protective coatings on objects of aluminum or alloys of aluminum in which the surface is provided with a porous layer of alumina and in which metal pigments are deposited into the pores of the layer by alternating current electrolysis with the object mounted as an electrode in an aqueous acid solution of metal salts containing nickel sulphate and nickel chloride as essential salts.

3,704,211

PROCESS FOR ELECTROPLATING MAGNETIC FILMS FOR HIGH DENSITY RECORDING

Sidney L. Phillips, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 19, 1971, Ser. No. 144,961

Int. Cl. C23b *5/32*

U.S. Cl. 204—43 **17 Claims**

A process for depositing a nickel-cobalt magnetic electroplate upon an electrically conducting substrate by passing a current between an anode and a substrate as the cathode through an electrolyte, where the electrolyte contains at least a soluble nickel salt and a soluble cobalt salt in solution, with the improvement for the purpose of effecting the M_r/H_c ratio characterized by the addition of at least a small but effective amount of rhenium as a soluble rhenium salt to the electrolyte. The rhenium may be specifically added as potassium perrhenate to an electrolyte comprising nickel chloride and cobalt chloride salts in an aqueous solution.

3,704,212

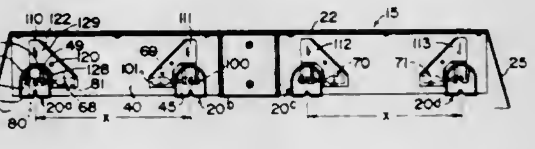
ADJUSTABLE LIGHT FIXTURE FOR U-SHAPED LAMPS

Richard C. Piccola, Hawthorne, N.J., assignor to The Celotex Corporation, Tampa, Fla.

Filed Oct. 22, 1970, Ser. No. 82,897

Int. Cl. H01r *33/08*

U.S. Cl. 240—51.12 **5 Claims**



An adjustable light fixture for U-shaped fluorescent lamps accommodates lamps of different base spacing by providing spaced interconnected slots to receive moveable lamp sockets and moveable closure means to hide unused slots.

3,704,213

ACID COPPERING BATH

Roger Fournier, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt, Hauts-de-Seine, and Automobiles Peugeot, Paris, France

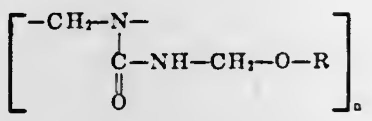
No Drawing. Filed Jan. 20, 1971, Ser. No. 108,141

Claims priority, application France, Jan. 22, 1970, 7002242

Int. Cl. C23b *5/20;* **C08g** *9/10*

U.S. Cl. 204—52 R **2 Claims**

Aqueous bright acid electrolytic coppering bath containing a copper salt, a brightener, a surface tension agent, characterized in that it further contains a levelling agent having the general formula:



$$\left[\begin{array}{l} -CH_2-N- \\ \qquad\quad | \\ \qquad\quad C-NH-CH_2-O-R \\ \qquad\quad \| \\ \qquad\quad O \end{array}\right]_n$$

wherein *n* is of the order of 500 to 1,000, resulting from the addition of two formaldehyde molecules on one urea molecule, the resultant molecule being modified by a heavy alcohol or one of its derivatives.

3,704,214

PROCESS FOR PREPARING PERFLUORINATED LINEAR POLYETHERS

Dario Sianesi, Adolfo Pasetti, and Constante Corti, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Application June 30, 1967, Ser. No. 650,257, which is a continuation-in-part of application Ser. No. 446,292, Apr. 7, 1965. Divided and this application May 1, 1970, Ser. No. 43,654

Claims priority, application Italy, Apr. 9, 1964, 7,678/64; Dec. 16, 1966, 31,193/66

Int. Cl. B01j *1/10*

U.S. Cl. 204—158 **12 Claims**

Perfluorinated cyclic ethers and fluorinated linear polyethers are prepared by photochemical reaction in liquid phase of perfluoropropylene with oxygen in presence of ultraviolet radiation.

3,704,215

PROCESS FOR THE PRODUCTION OF BENZOYL CHLORIDE AND BENZOTRICHLORIDE USING LIGHT

Walter Böckmann, Krefeld-Uedingen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 6, 1970, Ser. No. 9,444

Claims priority, application Germany, Feb. 26, 1969, P 19 09 523.9

Int. Cl. B01j *1/10*

U.S. Cl. 204—163 R **1 Claim**

Dibenzyl ether which is a by-product of the alkaline hydrolysis of benzylchloride to benzyl alcohol is subjected to the usual conditions for the chlorination of side chains of alkyl-substituted aromatic hydrocarbons yielding benzoyl chloride and benzotrichloride which are useful compounds for the production of benzaldehyde and benzoic acid respectively.

3,704,216

METHOD OF DEPOSITING A METAL OXIDE FILM BY ELECTRON BOMBARDMENT

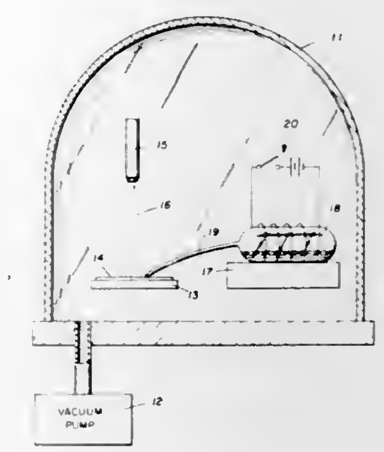
Warren O. Kinstley and David R. Sivertsen, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 11, 1969, Ser. No. 857,048

Int. Cl. C23f *7/02;* **B01k** *1/00*

U.S. Cl. 204—164 **3 Claims**

A substrate to be coated is supported within an evacuated chamber and subjected to a concentrated flow of an organo-metallic gas. Simultaneously, a high energy electron beam is directed to impinge upon the surface of the substrate to define the area of the substrate to be coated. The energy from the electron beam serves to both ionize the organo-metallic compound and to locally heat an area of the surface of the substrate to be coated thereby pyrolyzing the organo-metallic compound, driving off the organic material and depositing a coating of metal oxide upon the selected area of the substrate. MOS field effect transistors are formed with insulating oxide films produced by the present process.



3,704,217

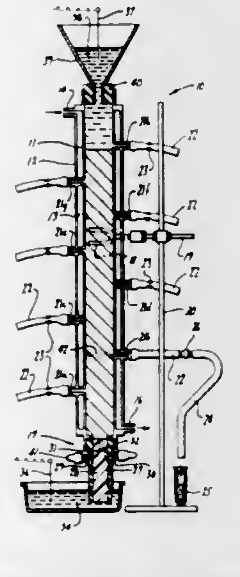
SEGMENTAL MACROMOLECULAR SEPARATION METHOD AND APPARATUS

Samuel T. Nerenberg, 21 Hayward Court, Burlingame, Calif. 94010

Continuation-in-part of application Ser. No. 831,509, June 9, 1969. This application Sept. 8, 1969, Ser. No. 855,966

Int. Cl. B01d *13/02;* **B01k** *5/00*

U.S. Cl. 204—180 G **13 Claims**



A process and apparatus for the segmental separation by chromatography, electrochromatography, and electrophoresis of a mixture of macromolecules by means of a separation gel medium disposed in a multiported, upstanding, elongated column. The macromolecules are separated into bands across the gel and selected bands are removed through a convenient one of such ports.

3,704,218

ELECTRODIALYSIS METHOD USING ION EXCHANGE MEMBRANES

Masaaki Kato and Shigeta Sato, Yokohama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

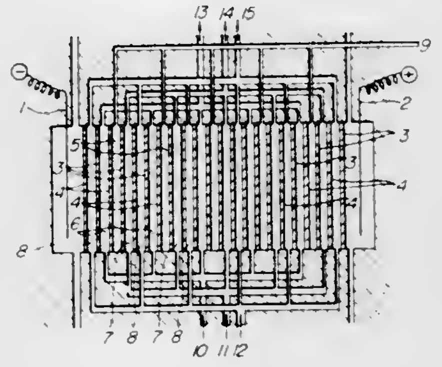
Filed Dec. 16, 1969, Ser. No. 885,530

Claims priority, application Japan, Dec. 16, 1968, 43/91,561

Int. Cl. B01d *13/02, 59/42*

U.S. Cl. 204—180 P **16 Claims**

Hydrogen ions and hydroxyl ions are generated economically in an electrodialysis cell comprised of a plurality of anion exchange membranes and cation exchange membranes alternately juxtaposed between a pair of an anode and a cathode by filling aqueous solution or suspension containing at least one electrolyte which is incapable of passing through the ion exchange membrane and is selected from the group consisting of (1) water soluble polyelectrolytes (polymeric electrolytes) having negatively charged fixed groups and (2) finely pulverized water-insoluble solid electrolytes having negatively charged fixed groups in the water decomposition compartments and passing a direct current between the electrodes. Polyvalent metal ions in a valence state of at least 2 may be added to said solution or suspension.



3,704,219

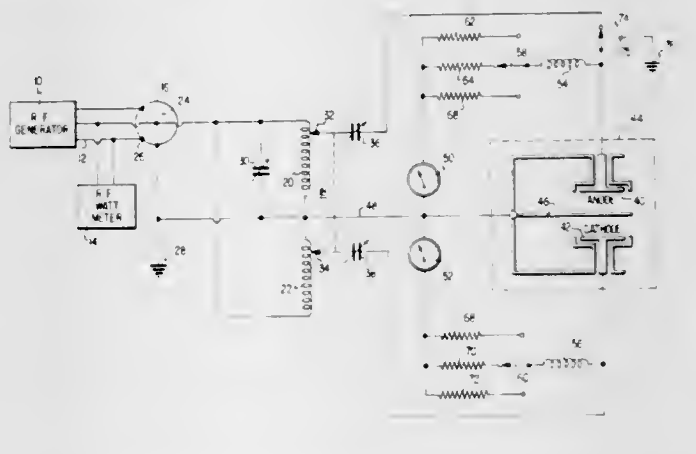
IMPEDANCE MATCHING NETWORK FOR USE WITH SPUTTERING APPARATUS

Robert Bruce McDowell, Metuchen, N.J., assignor to McDowell Electronics, Inc., Metuchen, N.J.

Filed Apr. 7, 1971, Ser. No. 131,903

Int. Cl. C23c *15/00*

U.S. Cl. 204—192 **13 Claims**



An impedance matching network for use with a radio frequency bias sputtering system where the system is impedance matched to a radio frequency power generator connected via an input line to the impedance matching network. The matching network permits near 0 to 100% bias sputtering in either direction.

3,704,220

APPARATUS FOR ETCHING THE SURFACE OF A METAL WORKPIECE

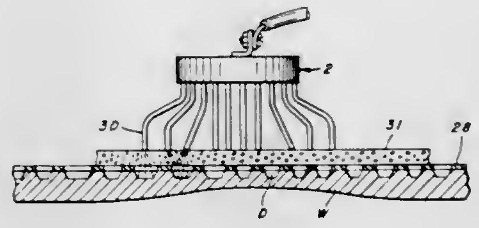
Robert H. Ashworth, Penn Hills Township, Allegheny County, Pa., assignor to United States Steel Corporation

Filed Apr. 15, 1970, Ser. No. 28,901

Int. Cl. B23p *1/02;* **C23b** *5/76*

U.S. Cl. 204—224 **7 Claims**

The embossed surface of a metal workpiece is repaired by utilizing an electrode having relatively closely spaced discharge areas adjacent its center and relatively widely spaced discharge areas at its outer portion. A suitable stencil is placed on the surface to be repaired and a pad saturated with electrolytic fluid is placed on the stencil. The electrode and workpiece are connected to opposite poles of a D.C. power source and the free end of the electrode is pressed into the pad. During the repair embossing operation the electrode is occasionally lifted from the pad and then lowered into the pad in a slightly different position. The apparatus can also be used to emboss the plain surface of a metal workpiece.



3,704,221

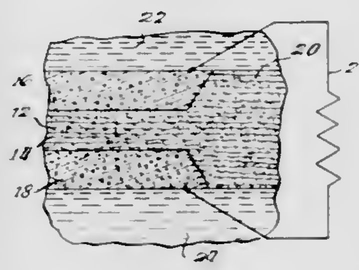
MEDIUM FOR IONIC TRANSPORT

Charles Roland McCully, Prospect Heights, Ill.; Roland A. McCully, executor of Charles R. McCully, deceased

Filed Nov. 9, 1967, Ser. No. 681,855

Int. Cl. B01k *3/10*

U.S. Cl. 204—295 **30 Claims**



In an electrochemical device, such as a galvanic cell, or an electrolytic cell, there is provided a non-aqueous medium which serves as a barrier to liquid flow while permitting transport of ions. The medium is made of a porous inert retention agent impregnated with a non-aqueous solution of an ionic material containing the ion to be transported. In most cases, the porous inert retention agent is made of mineral fibers, which may be bonded together by a fluorocarbon resin. Less preferably, a porous structure of mineral particles bonded together by a fluorocarbon resin may be substituted for the fibrous matte.

3,704,222

DEVICE FOR AUTOMATIC CONTROL OF THE PROCESS OF CRUDE PETROLEUM DESALTING AND DEHYDRATION IN ELECTRIC DEHYDRATORS

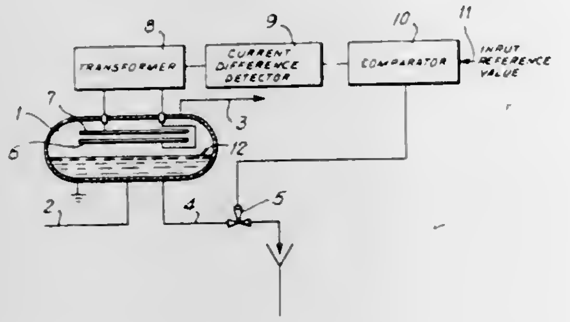
Boris Isaakovich Kusovsky, Nikolai Ivanovich Pavlov, Anatoly Petrovich Matiichenko, Sergi Alexandrovich Zakharov, and Dmitry Anatolievich Birjukov, Ryazan, U.S.S.R., assignors to Ryazansky Filial Spetsialnogo Konstruktorskogo Bjuro Ann, Ryazan, U.S.S.R.

Filed Jan. 22, 1970, Ser. No. 4,957

Int. Cl. B03c *5/02;* **C10g** *33/02*

U.S. Cl. 204—306 **1 Claim**

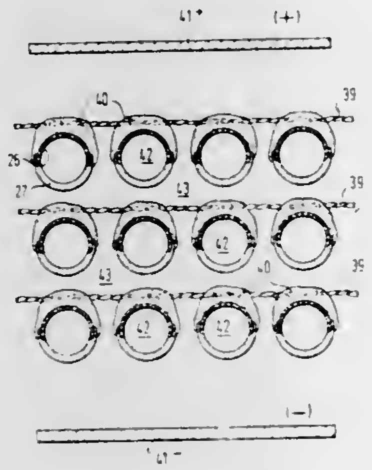
A device for automatic control of crude petroleum desalting and dehydration processes in electric dehydrators by varying the currents in electrode circuits as a result of discharging water and sludge via a regulating valve controlled by an actuating mechanism. A detector determines current difference in the top and bottom electrode circuits, the detector being connected to a comparator for



comparing the currents in the electrode circuits with a reference input, the comparator being, in turn, coupled to an actuating mechanism of the regulating valve.

3,704,223
DIALYSIS APPARATUS WITH CAPILLARY EXCHANGER

Hans-Joachim Dietzsch, Villars-sur-Ollon, Vaud, and Otto Dietzsch, Stein am Rhein, sh, Switzerland
Filed June 6, 1969, Ser. No. 831,174
Claims priority, application Switzerland, June 8, 1968, 8,632/68; Austria, May 27, 1969, 5,012/69
Int. Cl. B01d *13/00, 13/02;* **C02b** *1/60*
U.S. Cl. 204—301 **14 Claims**



Membrane capillary exchangers including multiple countercurrent exchangers and the processes for making and using them are disclosed in the present application. The membrane capillary is produced by deposition onto an auxiliary core followed by bundling a plurality of the capillaries, introducing a means for holding into the ends of the cores, casting and hardening the means for holding to the ends of the capillaries, removing the mold and then removing the auxiliary cores from the interior of the membranes. The exchanger is operable in the chamber for dialysis liquid treatment.

3,704,224
PROCESS FOR MANUFACTURE OF IMPROVED NEEDLE COKE FROM PETROLEUM

Warner E. Scovill, Lakewood, and Donald R. Day, Garfield Heights, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio
No Drawing. Filed Oct. 2, 1970, Ser. No. 77,735
Int. Cl. C10g *9/14*
U.S. Cl. 208—131 **3 Claims**

An improved coke for the production of graphite electrodes is produced from a petroleum coking feedstock containing 0.01% by weight or more of spent cracking catalyst by reducing the spent cracking catalyst content of the petroleum coking feedstock to less than 0.005% by weight prior to the coking of said feedstock. When a small amount of colloidal graphite is added to the petroleum coking stock having less than 0.005% by weight of spent cracking catalyst just before it is coked, an additional improvement in the coke is obtained.

3,704,225
NONSWELLING TEXTURING SPIN FINISH

Barry Michael Shay, Wilmington, Del., assignor to ICI America Inc.
No Drawing. Filed Dec. 8, 1970, Ser. No. 96,250
Int. Cl. D06m *13/00*
U.S. Cl. 252—8.9 **4 Claims**

High-temperature stable alkyl stearate lubricant compositions which are especially useful as spin finishes in producing textured polyester yarns are obtained by forming aqueous emulsion blends with antistatic agents and thermal stabilizing agents using selective emulsifiers such as polyoxyethylene derivatives of sorbitol and sorbitan polyoleates. The finishes are superior in that they do not attack or swell polyurethane belts and cots used in commercially available false twist texturing equipment.

3,704,226
PROCESS FOR THE PREPARATION OF PERMANENTLY MAGNETIZABLE MIXED OXIDES CONTAINING IRON

John W. Geus, Sittard, Netherlands, assignor to Stamicarbon N.V., Heerlen, Netherlands
No Drawing. Continuation of application Ser. No. 811,623, Mar. 28, 1969. This application Dec. 21, 1970, Ser. No. 100,450
Claims priority, application Netherlands, Mar. 30, 1968, 6804511
Int. Cl. C04b *35/26, 35/28, 35/32, 35/36*
U.S. Cl. 252—62.56 **1 Claim**

A process for the preparation of permanently magnetizable iron containing mixed oxides by precipitation from an aqueous solution is disclosed. An aqueous solution of a ferrous salt containing also one or more salts of other metals, but no oxidizing agents, is intensively stirred, whereby a precipitate is gradually formed at elevated temperature by hydrolizing urea, likewise present in the solution, to ammonium carbamate, or ammonium carbonate, and the precipitate so formed is subsequently separated from the liquid, washed, dried and, if necessary, heat-treated in contact with air. Preferably the precipitation is carried out in an inert atmosphere. If the precipitate is used for the preparation of a permanently magnetizable mixed oxide to be used on tapes or sheets, the material is subjected to a thermal treatment below 500° C., and for the preparation of moulded objects, the compressed material is subjected to a thermal treatment at temperatures of 1000° C. or over.

3,704,227
DENTURE CLEANSERS

William H. Hill, Stamford, Conn., assignor to Peter, Strong & Company, Inc., New York, N.Y.
No Drawing. Continuation-in-part of applications Ser. No. 210,584, July 17, 1962, Ser. No. 507,705, Nov. 15, 1965, now Patent No. 3,372,125, and Ser. No. 709,900, Mar. 4, 1968, now Patent No. 3,488,288. This application Nov. 20, 1969, Ser. No. 878,562
Int. Cl. C11d *7/54*
U.S. Cl. 252—95 **1 Claim**

Improvements are set forth in the production of denture cleansers containing inorganic peroxy oxygen-liberating compounds which when added to water cause evolution of oxygen and bubbling. More vigorous bubbling and hence more efficient cleansing of artificial dentures is brought about by the inclusion of catalysts. A particularly adaptable activating material is one which consists of a heavy metal chelate. The shelf-life of a cleanser of the type described is found to be greatly lengthened if it does not contain an excess of the heavy metal component. It is also found advantageous to avoid an excess of the chelating agent. Thus it is preferred to prepare the heavy metal chelate with its component parts in stoichiometric proportions.

3,704,228
WASHING AGENTS CONTAINING A TEXTILE SOFTENER

Hans-Werner Eckert, Dusseldorf, and Johannes Jurgen Perner, Monheim, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany
No Drawing. Filed Apr. 16, 1970, Ser. No. 29,288
Claims priority, application Germany, June 7, 1969, P 19 29 040.5
Int. Cl. C11d *1/52, 1/66;* **D06m** *13/40*
U.S. Cl. 252—117 **18 Claims**

Detergent compositions containing textile softeners consisting essentially of:

(1) From 10% to 80% by weight of a mixture of surface-active agents consisting essentially of:

(a) From 20% to 90% by weight of customary surface-active compounds utilizable in neutral to alkaline textile washing baths selected from the group consisting of anionic surface-active compounds, amphoteric surface-active compounds, non-ionic surface-active compounds, and mixtures thereof, wherein not more than 50% by weight of said surface-active compounds are non-ionic surface-active compounds, and

(b) From 80% to 10% by weight of a textile softener composition of a higher fatty acid monoamide of a hydroxyalkylpolyamine, said higher fatty acids having from 8 to 24 carbon atoms with at least 50% of said higher fatty acids having from 16 to 24 carbon atoms, said hydroxyalkylpolyamine having at least one hydroxyalkyl selected from the group consisting of hydroxyethyl, hydroxypropyl and dihydroxypropyl and at least two hydrogen atoms bonded to nitrogen atoms, said textile softener containing less than 5% by weight of fatty acid partial glycerides, and

(2) From 20% to 90% by weight of other customary components of detergent compositions.

3,704,229
EPOXY RESIN CURING AGENT

Hiroji Tashiro and Tutomu Yamaguchi, Tokyo, Japan, assignors to Toka Shikiso Chemical Industry Co., Ltd., Tokyo, Japan
No Drawing. Filed Dec. 17, 1969, Ser. No. 885,974
Claims priority, application Japan, Dec. 26, 1968, 43/94,989
Int. Cl. C08f *45/72, 51/84*
U.S. Cl. 252—182 **5 Claims**

A novel epoxy resin curing agent curable even in a wet state and having an improved compatibility with tar is prepared by adding acrylic acid ester as component A, to a mixture of at least one of slightly-water-soluble or unsoluble aliphatic amines having primary amines, as component B, and xylene diamine, as component C in the first stage reaction and amidizing one mole of terminal ester groups of said addition products with component C in the second stage reaction. The present curing agent is less toxic and a clear liquid low viscosity and a desired epoxy cured product can be obtained by mixing it with an epoxy resin by freely changing the mixing ratio.

3,704,230
EXOTHERMIC COMPOSITIONS

Domingos Loricchio, Sao Paulo, Brazil, assignor to The Carborundum Company, Niagara Falls, N.Y.
No Drawing. Filed Jan. 22, 1971, Ser. No. 108,999
Claims priority, application Brazil, Feb. 17, 1970, 216,800
Int. Cl. B22d *7/10;* **C21c** *7/06*
U.S. Cl. 252—182 **11 Claims**

An exothermic composition, useful for example, in casting cast iron (to keep the iron molten in the header of the mold while the iron within the mold solidifies and contracts, therefore requiring additional molten iron to fill up the mold) comprises silicon carbide; a silicon carbide decomposition catalyst (e.g., lead dioxide, potassium dichromate, or lead chromate); and optionally, such additional ingredients as a combustible organic filler, a silicon carbide decomposition retardant (such as alumina or silica), calcium chloride, and ferrosilicon.

3,704,231
CHEMILUMINESCENT ADDITIVES

Laszlo Joseph Bollyky, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.
Continuation of abandoned application Ser. No. 675,141, Sept. 13, 1967, which is a continuation-in-part of application Ser. No. 577,595, Sept. 7, 1966. This application Feb. 16, 1971, Ser. No. 115,734
Int. Cl. C09k *3/00*
U.S. Cl. 252—188.3 **5 Claims**

A chemiluminescent system having as a chemiluminescent reactant (1) aromatic oxalic-type esters or (2) glyoxal-type compounds, which react with a hydroperoxide to produce chemiluminescent light in the presence of a fluorescer, the system including as an additive neutral and basic salts having cations from the group of alkali metal, tetraalkyl and tetraaryl ammonium, arsenium and phosphonium cations which give improved brightness and quantum yield to the system.

3,704,232
PREPARATION OF SULFIDE PHOSPHORS

James O. Frey and Harry L. Marshall, Towanda, and Henry B. Minnier, Dushore, Pa., assignors to GTE Sylvania Incorporated
Filed Sept. 24, 1970, Ser. No. 74,966
Int. Cl. C09k *1/12*
U.S. Cl. 252—301.6 S **3 Claims**

An improved process for producing phosphor compositions having a multivalent metal sulfide host and a source of activator material comprising at least one metal having a tripositive valence which comprises adding at least about 0.5% barium chloride flux material and heating the mixture in an atmosphere of carbon disulfide and an inert gas carrier at a volumetric ratio of carbon disulfide to inert gas of at least about 1:50.

ERRATA

For Classes 252—353 thru 252—524 see:
Patents Nos. 3,704,262 thru 3,704,267

For Classes 252—54.6, 252—62.51 and 252—546 see:
Patents Nos. 3,704,277, 3,704,278 and 3,704,370

3,704,233

O-ACYL-LYSERGOLS AND PROCESS FOR PREPARING THEM

Eckart Eich, Marienborn, and Hans Rochelmeyer, Mainz, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

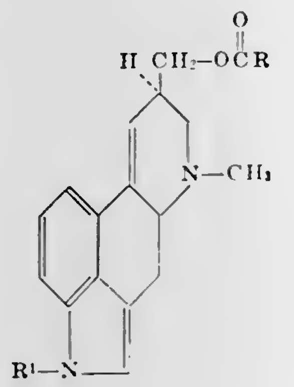
No Drawing. Filed July 14, 1970, Ser. No. 54,861

Claims priority, application Germany, July 17, 1969, P 19 36 410.4

Int. Cl. C07d *43/20*

U.S. Cl. 260—285.5 **5 Claims**

O-acyl-lysergols of the formula



and their salts with non-toxic acids, which compounds show uterus-contracting and serotonin-antagonistic activity, wherein R is alkyl, haloalkyl, hydroxyalkyl, lower alkoxyalkyl, amino, mono- or di-lower alkylamino, tetramethyleneimino, pentamethyleneimino, alkenyl, cycloalkyl, cycloalkylalkyl, alkylcycloalkyl, phenylalkyl, or furyl; and R^1 is hydrogen or lower alkyl. Method for making the same by reaction of corresponding elymoclavines or lysergols with an acid, RCOOH, or an ester-forming derivative thereof.

3,704,234

SPIRO PYRANO[3,2-f]QUINOLINE-3,1-PYRIDO[3,4-b] INDOLE

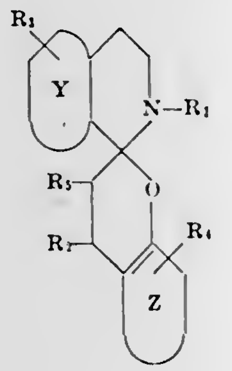
Maximilian von Strandtmann, Rockaway, Marvin P. Cohen, New Milford, and John Shavel, Jr., Mendham, N.J., assignors to Warner-Lambert Company

No Drawing. Original application Oct. 24, 1969, Ser. No. 869,335, now Patent No. 3,649,635, dated Mar. 14, 1972. Divided and this application May 17, 1971, Ser. No. 144,259

Int. Cl. C07d *35/10*

U.S. Cl. 260—288 **2 Claims**

The present invention is concerned with spiropyranopyridines of Formula I:



wherein Y and Z are aromatic or heteroaromatic nuclei, R_1, R_2, R_3, R_4 and R_5 are hydrogen or various substituents such as alkyl, aryl, alkoxy, halogen, etc.

The compounds of this invention are useful as antiarrhythmic agents.

3,704,235

STABLE FREE RADICALS OF THE NITROXIDE TYPE DERIVED FROM TROPANE RING COMPOUNDS

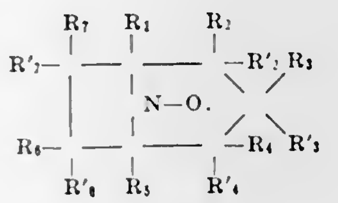
Andre Rassat and Jacques Ronzaud, Grenoble, France, assignors to Commissariat a l'Energie Atomique, Paris, France

No Drawing. Filed Jan. 11, 1971, Ser. No. 105,627

Int. Cl. C07d *43/06*

U.S. Cl. 260—292 **2 Claims**

Free radicals of the nitroxide type constituted by nitrogenous bicyclic compounds having the general formula:



in which R_1, R_2, R'_2, R_4, R'_4, R_5, R_6, R'_6, R_7 and R'_7 are selected from the group formed by hydrogen atoms and organic radicals and R_3 and R'_3 are selected from the group formed by two hydrogen atoms, the groups OH, NH_2, N—OH, N—NH_2, —COOH, —COOH, —$CONH_2$ or constitute with the atom C of the ring the ketone group —C=O.

3,704,236

S-(PYRIDYL)METHYL THIOCARBAMATES

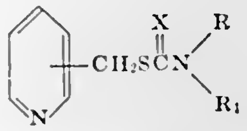
Harry Tilles, El Cerrito, and Mervin E. Brokke, Moraga, Calif., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Oct. 7, 1968, Ser. No. 765,681, now Patent No. 3,579,525. Divided and this application Nov. 20, 1970, Ser. No. 91,582

Int. Cl. C07d *31/50*

U.S. Cl. 260—293.69 **5 Claims**

S-(pyridyl)methyl thio- and dithio-carbamates having the formula



in which X is oxygen or sulfur, R and R_1 are independently alkyl, alkenyl, or cyclohexyl and R and R_1 taken together are alkylene and dialkyl substituted alkylene, provided that when X is sulfur and R and R_1 are both alkyl, at least one of the alkyl groups contains 3 or more carbon atoms. The above compounds, as well as those excluded by the proviso, are effective herbicides. Representative compounds are

S-(3-pyridyl)methyl di-n-propylthiocarbamate,
S-(2-pyridyl)methyl di-n-butylthiocarbamate,
S-(4-pyridyl)methyl methylcyclohexylthiocarbamate,
S-(4-pyridyl)methyl ethyl-n-butylthiocarbamate and S-(3-pyridyl)methyl 1 - (5-ethyl-2-methyl-piperidinecarbothioate).

3,704,237

CERTAIN 2-AMIDINO-1,2,3,4-TETRAHYDROBENZOTHIENE[2,3-c]PYRIDINES

John T. Suh, Mequon, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 875,587, Nov. 10, 1969, now abandoned, which is a continuation-in-part of application Ser. No. 705,892, Feb. 16, 1968, now Patent No. 3,518,277, which in turn is a continuation-in-part of application Ser. No. 621,437, Mar. 8, 1967, now abandoned. This application Apr. 29, 1971, Ser. No. 138,838

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 B **7 Claims**

The compounds are derivatives of 1,2,3,4-tetrahydrobenzothieno[2,3-C]pyridine and 1,2,3,4 - tetrahydro-5H-benzothieno[2,3-C]azepine, useful as antipsychotics, antihypertensives, and central nervous system stimulants. Representative compounds disclosed are 2-amidino-1,2,3,4-tetrahydro-5H-benzothieno[2,3-C]azepine and 2-amidino-1,2,3,4-tetrahydrobenzothieno[2,3-C]pyridine.

3,704,238

PROCESS FOR PRODUCING 4,4'-BIPYRIDYL FROM 4,4' - BI(4H)PYRAN OR 4,4' - BIPYRYLENE BY AMMOXIDATION

Roy Dennis Bowden, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Mar. 3, 1969, Ser. No. 803,983

Claims priority, application Great Britain, Mar. 15, 1968, 12,643/68

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 D **11 Claims**

4,4'-bi(4H)pyrans and 4,4'-bipyrylenes are disclosed. These products are made by reducing the corresponding pyrylium salt whereby two molecules of the salt are coupled together to form the bi-(4H)-pyran and the bi-pyrylene. The 4,4'-bi(4H)-pyran or 4,4'-bipyrylene may be treated in the liquid phase with ammonium ions or ammonia in the presence of molecular oxygen to produce a 4,4'-bi-pyridyl.

3,704,239

CERTAIN THIAZOLE[3,2-a]BENZIMIDAZOLE COMPOUNDS

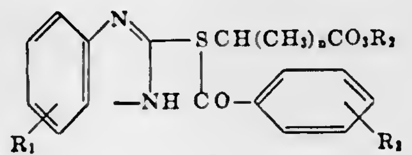
Peter H. L. Wei, Springfield, and Stanley C. Bell, Penn Valley, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Mar. 17, 1971, Ser. No. 125,378

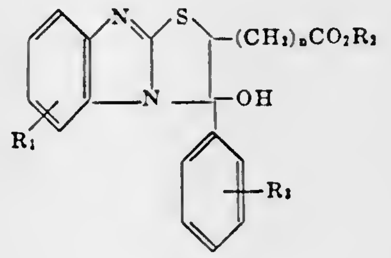
Int. Cl. C07d *99/08*

U.S. Cl. 260—306.7 **8 Claims**

Compounds of Formula I and Formula II have been prepared which have CNS depressant and antitubercular activity:



I



II

wherein

R_1 is selected from the group consisting of hydrogen, halogen, (lower)alkyl, trifluoromethyl, nitro and amino;
R_2 is selected from the group consisting of hydrogen and (lower)alkyl;
R_3 is selected from the group consisting of hydrogen, halogen, (lower)alkyl, trifluoromethyl, nitro, amino, phenyl, halophenyl and (lower)alkylphenyl;
n is an integer of from 1 to 3;

and the pharmaceutically acceptable acid addition salts thereof.

3,704,240

3-SUBSTITUTED-4-HYDROXY - 2 - SUBSTITUTED IMINO - 4 - PHENYL-5-THIAZOLIDINE ALKYL CARBOXYLIC ACIDS AND THEIR ALKYL ESTERS

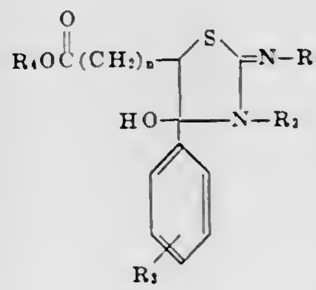
Peter H. L. Wei, Springfield, and Ronald J. McCaully, Malvern, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Mar. 17, 1971, Ser. No. 125,402

Int. Cl. C07d *91/14*

U.S. Cl. 260—306.7 **7 Claims**

Novel compounds of the formula:



have been prepared which have antitubercular activity.

3,704,241

4-PYRAZOLE ACETIC ACID COMPOUNDS

Shunsaku Noguchi and Shoji Kishimoto, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan

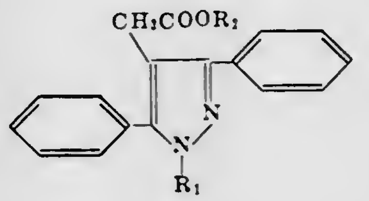
No Drawing. Filed Nov. 17, 1970, Ser. No. 90,421

Claims priority, application Japan, Nov. 17, 1969, 44/91,901

Int. Cl. C07d *49/18*

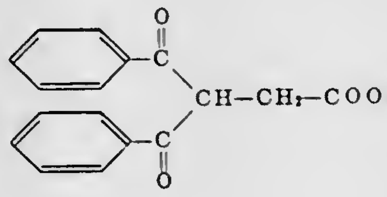
U.S. Cl. 260—310 R **8 Claims**

4-pyrazole acetic acid or esters thereof of the formula:



(I)

wherein R_1 is hydrogen, lower alkyl, aryl or aralkyl, the aromatic ring of the said aryl or aralkyl being substituted or unsubstituted, and R_2 is hydrogen or alkyl are prepared by reacting a β,β-dibenzoylpropionate of the formula:



(II)

wherein R_3 represents alkyl, with a hydrazine of the formula:

$$R_1\text{—}NHNH_2 \qquad (III)$$

wherein R_1 has the same meaning as above, and, if desired, hydrolyzing the thus obtained compound. The compounds possess anti-inflammatory and analgesic action.

3,704,242
5 - HYDROXY-3-ALKYL-1-(THIOCARBAMOYL OR ALKYLTHIOCARBAMOYL)-PYRAZOLE-4-ALKANOIC ACID DERIVATIVES

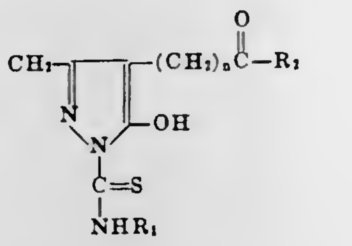
Arthur A. Santilli, Havertown, and Dong H. Kim, Wayne, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Dec. 30, 1970, Ser. No. 102,952

Int. Cl. C07d *49/18*

U.S. Cl. 260—310 R **7 Claims**

Novel compounds of the formula



wherein

R_1 is selected from the group consisting of hydrogen and (lower)alkyl;

R_2 is selected from the group consisting of hydroxy, amino and (lower)alkoxy;

n is a whole integer of 1 or 2. The compounds are active as inhibitors of mycobacterium tuberculosis.

3,704,243
N-(SUBSTITUTED SULFONYLMETHYL)-2-PYRROLIDINONES

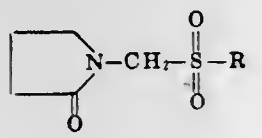
Harlan B. Freyermuth and David I. Randall, Easton, Pa., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed Mar. 30, 1970, Ser. No. 24,028

Int. Cl. C07d *27/08*

U.S. Cl. 260—326.5 SF **7 Claims**

Sulfonylmethyl derivatives of N-methyl-2-pyrrolidinone of the structural formula:



wherein R represents a hydrocarbon group such as alkyl, aryl, cycloalkyl, aralkyl or alkaryl, are useful as dyestuff intermediates. They are prepared by the reaction of N-hydroxymethyl - 2 - pyrrolidinone with an appropriate sulfinic acid.

3,704,244
N-LOWER ALKYL-SUBSTITUTED N'-[β-(2',5'-DIPHENYLPYROLYL - 1')] ETHYLHOMOPIPERAZINES

Akihide Kohda, Gifu, and Shigeharu Kohno, Tohru Takahashi, and Hachiro Sugimoto, Tokyo, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

No Drawing. Filed Sept. 21, 1970, Ser. No. 74,165

Int. Cl. C07d *27/26, 53/02*

U.S. Cl. 260—326.9 **8 Claims**

New compounds, N-lower alkyl-substituted N'-[β-(2', 5' - diphenylpyrrolyl-1')]ethylhomopiperazines and pharmacologically acceptable acid-addition salts thereof. The compounds possess not only anti-histamine activity but also antagonising effect to the S. R. S. (Slow Reacting Substance). They are therapeutically useful for bronchodilation and for treatment of asthma attack. The compounds are advantageously administrated in a form of their pharmacologically acceptable water soluble salts.

3,704,245
TRICYCLIC ENOL ETHER COMPOUNDS

Suminori Umio, 7 Midorigaoka, Aza, Yamanohara, Kawanishi-shi, Japan; Ikuo Ueda, 3-2-4 Higashikyuhoji, Yao-shi, Japan; Yoshinari Sato, 2-2-10 Midorigaoka, Ikeda-shi, Japan; and Shizuo Maeno, 3-22 Kikawanishino-cho, Higashiyodogawa-ku, Osaka-shi, Japan

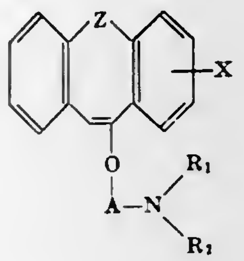
No Drawing. Continuation-in-part of application Ser. No. 799,092, Feb. 13, 1969. This application Aug. 15, 1969, Ser. No. 850,660

Claims priority, application Japan, Feb. 16, 1968, 43/9,684

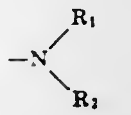
Int. Cl. A61k *27/00;* **C07d** *9/00, 67/00*

U.S. Cl. 260—327 B **6 Claims**

Tricyclic enol ether compounds of the general formula:



wherein X is hydrogen, halogen, lower alkyl, lower alkoxy, lower alkylthio, di(lower)alkylsulfamoyl, nitro, cyano, amino or trifluoromethyl; Z is oxy, thio or lower alkylimino; A is lower alkylene; and R_1 and R_2 are each lower alkyl or, when bound together intervening or not oxygen, nitrogen, lower alkylimino, hydroxy(lower)alkylimino, lower alkoxycarbonylimino, lower alkoxycarbonyl (lower)alkylimino, formylimino, lower alkanoyloxy (lower) alkylimino or lower alkanoylimino, the group of the formula:



represents a saturated 5 to 7-membered nitrogen-containing heterocyclic group. These compounds are useful as psychotropic and neutrotropic agents, particularly as tranquilizers.

3,704,246
AMINO ACID DERIVATIVES

Miklos Bodanszky, Shaker Heights, Ohio, assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 798,790, Feb. 12, 1969, which is a continuation-in-part of abandoned application Ser. No. 451,609, Apr. 28, 1965. This application Dec. 16, 1970, Ser. No. 98,924

Int. Cl. C07d *87/54*

U.S. Cl. 260—333 **9 Claims**

New lactone intermediates useful in the synthesis of peptides are prepared by reacting an α-amino acid with an active carbonyl compound which forms a Schiff's base. The latter is treated with a condensing agent so that cyclization occurs and a lactone is formed from which a peptide may be produced by reaction with an amino acid ester removal of the protecting groups.

3,704,247
METHOD FOR SYNTHESIZING FISH-KILLING SUBSTANCES, AND FISH KILLERS

Katsura Munakata, % Department of Agricultural Chemistry, Faculty of Agriculture, Nagoya University, 1 Furocho, Chikusa-ku, Nagoya, Japan

No Drawing. Original application Mar. 28, 1968, Ser. No. 717,037. Divided and this application Nov. 23, 1970, Ser. No. 92,143

Claims priority, application Japan, Mar. 30, 1967, 42/20,186

Int. Cl. C07d *13/10*

U.S. Cl. 260—340.5 **2 Claims**

A fish-killing active substance contained in *Justicia Hayatai* var. *decumbens* which is denominated as Justicidin B, i.e. 4-(3',4'-methylenedioxyphenyl)-6,7-dimethoxy - 2 - hydroxymethyl - 3 - naphthoic acid lactone, is synthesized by condensing α - acetyl - γ-(3,4-dimethoxybenzyl)-γ-butyrolactone with 3,4-methylenedioxybenzoyl chloride, deacetylating the resulting corresponding α-acetyl-α - (3,4 - methylenedioxybenzoyl)-γ-butyrolactone, treating the resulting deacetylation compound, that is α-(3,4-methylenedioxybenzoyl) - γ - butyrolactone, with hydrogen chloride-saturated methanol, and then reacting the resulting compound with potassium bisulfate to obtain a 1,2 - dihydro - 6,7-dimethoxy-4-(3',4'-methylenedioxyphenyl) - 2 - hydroxymethyl - 1,2 - dihydro - 3 - naphthoic acid lactone, followed by dehydrogenation. The TLm of the present compound toward *Oryzias latipes* is 0.028 p.p.m., and the dihydro compound also shows a marked fish-killing activity.

3,704,248
ZEARALENONE REDUCTION

Edward B. Hodge, Terre Haute, Ind., assignor to Commercial Solvents Corporation

No Drawing. Filed Apr. 2, 1970, Ser. No. 25,266

Int. Cl. C07d *9/00*

U.S. Cl. 260—343.2 F **5 Claims**

A method for reducing zearalenone to zearalanol using a Raney nickel catalyst wherein the ratio of the low melting diastereoisomer to the high melting point diastereoisomer of zearalanol in the product is increased. Zearalenone is catalytically reduced with hydrogen and in the presence of a lower alkanol which is substantially anhydrous and a strong base.

3,704,249
SYNTHESIS OF THE BIOLOGICALLY ACTIVE DIASTEREOISOMER OF (—) ZEARALANOL

Robert F. Czaja, Elizabeth, Victor J. Grenda, Warren, and Earl M. Chamberlin, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed May 1, 1969, Ser. No. 821,143

Int. Cl. C07d *9/00*

U.S. Cl. 260—343.2 F **7 Claims**

The active growth factor diastereoisomer of 6-(6,10-dihydroxy - undecyl) - β - resorcylic acid - μ - lactone or (—) zearalanol is prepared by stereospecific reduction of the carbonyl moiety of zearalanone, zearalenone, and diether derivatives thereof.

3,704,250
OCTALONE CARBOXYLIC ACID ANHYDRIDES

Abraham Weber, Paris, and Jacques J. Frossard, Champigny, France, assignors to Mead Johnson & Company, Evansville, Ind.

No Drawing. Original application Aug. 13, 1964, Ser. No. 389,489, now Patent No. 3,532,742, dated Oct. 6, 1970. Divided and this application June 5, 1970, Ser. No. 57,402

Int. Cl. C07d *5/32*

U.S. Cl. 260—346.3 **2 Claims**

Octalone carboxylic acids and their derivatives, which in part are useful as choleretic agents.

3,704,251
PRODUCTION OF PHENYL-MALEIC ANHYDRIDE BY CATALYTIC VAPOR PHASE OXIDATION OF BIPHENYL OR SEC-BUTYL BENZENE

Theodor Vrbaski, Harvey, Bernard C. Vitchus, Riverdale, and Robert Koncos, Park Forest, Ill., assignors to Sinclair Oil Corporation

No Drawing. Filed July 22, 1968, Ser. No. 746,294

Int. Cl. C07c *63/02*

U.S. Cl. 260—346.8 **14 Claims**

A process for the catalytic vapor phase oxidation of an aromatic hydrocarbon, which can be biphenyl or sec-butyl benzene, to produce phenyl-maleic anhydride which comprises oxidizing said aromatic hydrocarbon in the vapor phase at a temperature of about 350 to 480° C. with molecular oxygen-containing gas in the presence of an oxidation catalyst comprising an oxide of a Group V*b* metal, i.e. the vanadium group, which can be promoted with potassium sulfate.

3,704,252
ANTHRAQUINONE DYES

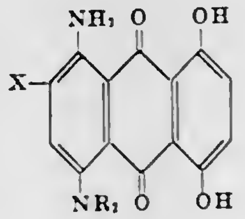
Hans-Samuel Bien, Burscheid, Walter Hohmann and Heinrich Vollmann, Leverkusen, and Heinrich Leister, Cologne-Stammheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Aug. 10, 1966, Ser. No. 571,431. Divided and this application May 25, 1970, Ser. No. 40,360

Int. Cl. C09b *1/54, 1/56*

U.S. Cl. 260—380 **7 Claims**

Halogenated dyes obtained by the halogenation of dyes of the formula



where R is hydrogen or optionally substituted alkyl or aryl; X is optionally substituted alkoxy, alkylthio, phenoxy, phenylthio benzyloxy, benzylthio or cyclohexylthio; containing 0.1 to 1 halogen atom per anthraquinone molecule having been prepared.

3,704,253
13 - POLYCARBONALKYL - 16 - METHYLGONA-1,3,5(10)-TRIENES AND 13-POLYCARBONALKYL-16-METHYLGON - 4 - EN-3-ONES AND INTERMEDIATES FOR THEIR PRODUCTION

Reinhardt P. Stein, Conshohocken, and Herchel Smith, Bryn Mawr, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 852,455, Aug. 22, 1969, which is a continuation-in-part of abandoned application Ser. No. 818,126, Apr. 21, 1969, which in turn is a continuation-in-part of abandoned application Ser. No. 767,809, Oct. 15, 1968. This application Sept. 23, 1970, Ser. No. 74,892

Int. Cl. C07c *167/20*

U.S. Cl. 260—397.4 **5 Claims**

Novel 13 - polycarbonalkyl - 16-methylgona-1,3,5(10)-trienes and 13-polycarbonalkyl-16-methylgon-4-en-3-ones and intermediates for their production are described which are pharmacologically active as estrogens and progestins respectively. Novel processes for their production are also described.

3,704,254

PROCESS FOR SEPARATING PHOSPHATIDES

Rajindra Aneja, Welwyn Garden City, England, assignor to Lever Brothers Company, New York, N.Y.

No Drawing. Filed Nov. 27, 1968, Ser. No. 779,589

Int. Cl. A23j *7/00;* **C07f** *9/02*

U.S. Cl. 260—403 **10 Claims**

N-acylphosphatides, for instance N-acetylcephalin, are separated from phosphatides without an acylatable amino group, for instance lecithin, by making a mixture containing them basic with a nitrogen base, for example triethylamine, to the equivalent of pH at least 8.5 under aqueous conditions and solvent-fractionating with acetone or methyl acetate.

3,704,255

POLYESTERS

Robert A. Braun, Rochester, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 776,824, Nov. 18, 1968. This application Mar. 3, 1971, Ser. No. 120,775

Int. Cl. C07c *69/76;* **C08g** *17/02*

U.S. Cl. 260—404.8 **5 Claims**

The polymers of this invention are made by first reacting an anhydride with a polyol, and then reacting the product with a hydroxyl terminated polyester. The polymers are useful as film-formers in coating compositions.

3,704,256

FLAME-RESISTANT POLYURETHANES

Robert L. Shone, Palatine, Ill., and Thomas W. Findley, Westbury, N.Y., assignors to Swift & Company, Chicago, Ill.

No Drawing. Filed Dec. 4, 1969, Ser. No. 882,338

Int. Cl. C09f *11/10*

U.S. Cl. 260—404.5 **4 Claims**

Halogen-containing polyisocyanates, obtained by reacting a halogen-containing higher fatty acid ester and a polyisocyanate, are produced and used to prepare flame-resistant, non-rigid, cellular materials such as polyurethane foams having minimum shrinkage on curing.

3,704,257

N-CYCLOHEXYL-N-(2-CYANOETHYL)OLEAMIDE AS A PLASTICIZER

Robert R. Mod, Frank C. Magne, and Evald L. Skau, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Application Oct. 12, 1967, Ser. No. 683,060, which is a division of application Ser. No. 529,652, Feb. 24, 1966, now Patent No. 3,403,126. Divided and this application Nov. 13, 1969, Ser. No. 876,554

Int. Cl. C09f *7/00*

U.S. Cl. 260—404.5 **1 Claim**

The invention provides N - cyclohexyl - N - (2 - cyanoethyl)oleamide as a plasticizer for vinyl chloride resins.

3,704,258

ENOL ETHER INTERMEDIATES FOR JUVENILE HORMONES AND ANALOGS

Clive A. Henrick and John B. Siddall, Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Filed Sept. 18, 1970, Ser. No. 73,599

Int. Cl. C07c *69/66;* **A01n** *9/24*

U.S. Cl. 260—410.9 R **9 Claims**

Stereospecific syntheses of the natural juvenile hormones and analogs and novel intermediates.

3,704,259

TRIS(BICYCLOHEPTYL)CHROMIUM

Barton K. Bower, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Feb. 2, 1971, Ser. No. 112,015

Int. Cl. C07f *11/00*

U.S. Cl. 260—438.5 R **2 Claims**

Organo trivalent chromium compounds are described wherein the chromium is linked to the bridgehead carbons of three bicyclic radicals, namely a 1-bicyclo-[2·2·1]-heptyl radical that contains two methyl groups attached to carbons adjacent to the bridgehead carbon, i.e., in the 2 and/or 6 position. A typical compound is tris(4-camphyl) chromium. These compounds are useful as catalysts for the polymerization of 1-olefins and can be used alone or in combination with organometallic activators such as alkylaluminum compounds.

3,704,260

PURIFICATION OF DIMETHYLHYDROGENCHLOROSILANE

Michael J. Wynn, Rexford, N.Y., assignor to General Electric Company

Filed Aug. 27, 1971, Ser. No. 175,489

Int. Cl. C07f *7/20*

U.S. Cl. 260—448.2 E **12 Claims**

Process for purifying dimethylhydrogenchlorosilane contaminated with 2-methylbutene-2 which comprises subjecting the impure dimethylhydrogenchlorosilane to a redistribution reaction and then subjecting it to distillation.

3,704,261

PREPARATION OF SILICON HYDRIDES

Abe Berger, Schenectady, and Frederick M. Lewis, Burnt Hills, N.Y., assignors to General Electric Company

No Drawing. Filed Oct. 18, 1971, Ser. No. 190,401

Int. Cl. C07f *17/08*

U.S. Cl. 260—448.2 E **15 Claims**

A method is provided for converting organosilicon halides, for example, halosilanes and bis(halosilyl)hydrocarbons, to the corresponding hydrides. Silicon halide reduction is effected by utilizing certain organometallic hydrides.

3,704,262

SURFACTANT FOR ELECTROLYTE-CONTAINING PROCESSING SOLUTIONS

Joseph A. Komor, Allentown, Pa., assignor to GAF Corporation, New York, N.Y.

No Drawing. Filed Mar. 19, 1970, Ser. No. 21,197

Int. Cl. B01f *17/02, 17/14*

U.S. Cl. 252—353 **2 Claims**

Surfactant compositions and baths for specific textile wet-processing operations are disclosed. The compositions exhibit surfactant qualities even in the presence of up to ten percent (10%) electrolytes including alkalies in the baths and are not adversely affected by water hardness, oxidative reagents or elevated bath temperatures. The compositions includes a blend of phosphate esters of 8-carbon alcohols with soluble sulphate esters of alkoxylated alcohols and alkyl phenols.

3,704,263

HYDROLYSIS OF ETHYL SILICATE

Jacob Rosin, Maplewood, N.J., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 244,261, July 7, 1965, which is a continuation-in-part of application Ser. No. 462,134, Dec. 13, 1962. This application Feb. 28, 1969, Ser. No. 803,396

Int. Cl. B01g *13/00*

U.S. Cl. 252—309 **3 Claims**

Method of preparing a stable solution of hydrolyzed ethyl silicate in ethanol having special utility as a binder for comminuted solids in mold making. The method is particularly distinguished in that an extremely low concentration of acid catalyst is employed in the hydrolysis.

3,704,264

ENCAPSULATION OF MONOMERIC MATERIALS

Jeremy W. Gorman, Simsbury, Conn., assignor to Loctite Corporation, Newington, Conn.

No Drawing. Continuation of abandoned application Ser. No. 699,382, Jan. 22, 1968. This application Dec. 16, 1970, Ser. No. 98,884

Int. Cl. B01j *13/02;* **B44d** *1/02*

U.S. Cl. 252—316 **12 Claims**

Single component microcapsules can be prepared by forming or injecting small, discrete portions of liquid monomeric composition capable of homopolymerization in a fluid containing a polymerization catalyst. A shell of homopolymer forms around the core of the liquid monomeric composition. The liquid monomeric composition employed is an anaerobic composition consisting essentially of a polymerizable acrylate ester monomer and an organic hydroperoxide polymerization initiator therefor.

3,704,265

SINTERED INORGANIC PHOTOCONDUCTIVE ELEMENTS AND THEIR METHOD OF PREPARATION

Shigeaki Nakamura, Tadao Nakamura, and Tadao Kobashi, Osaka, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Mar. 3, 1970, Ser. No. 16,134

Claims priority, application Japan, Mar. 7, 1969, 44/18,249

Int. Cl. C03g *5/00*

U.S. Cl. 252—501 **6 Claims**

Process for preparing sintered photoconductive elements from material which contains II–VI group compounds as a host component, I*b* group element as an activator and VII*b* or III*b* group element as a coactivator, which material is sintered in the presence of predetermined amounts of vitreous enamel and solvent flux.

The process provides photoconductive elements of an appropriate geometry and thickness and with satisfactory photosensitivity and stable photoconductive properties.

3,704,266

BARIUM TITANOZIRCONATE SEMICONDUCTING CERAMIC COMPOSITIONS

Hisayoshi Ueoka, Ichikawa-shi, Kazuo Horii, Hunabashi-shi, and Kazumasa Umeya and Syunsuke Maruyama, Ichikawa-shi, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Nov. 18, 1969, Ser. No. 877,768

Claims priority, application Japan, Nov. 18, 1968, 43/83,968

Int. Cl. C04b *33/00;* **H01b** *1/06*

U.S. Cl. 252—520 **6 Claims**

Ceramic semiconducting compositions are provided herein in which the compositions consist primarily of barium titanozirconate solid solutions, represented by the formula $Ba(Ti, Zr)O_3$ obtained by substituting part of $BaTiO_3$ with $BaZrO_3$ and in which small amounts of Bi_2O_3 and TiO_2 are added thereto, such that the range of proportions of the compositions fall within the region bounded by the line A–B–C–D–E–F–G and in which about 0.01 to 2 mol percent of Mn ions are added thereto. The disclosure also provides for a method of producing compositions having the aforementioned proportions by mixing the various ingredients together, pressing them into the desired shape and then sintering the compositions in air followed by reducing the compositions in a reducing atmosphere. Ceramics produced from such compositions contain a large capacitance, among other desirable properties, which make them suitable for use as by-pass capacitors or for use in various discriminating circuits.

3,704,267

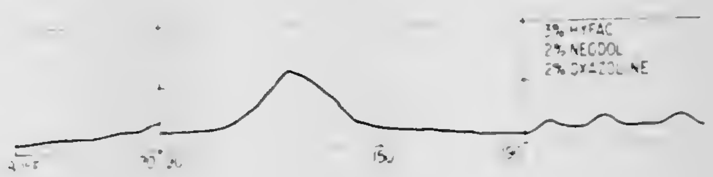
TERNARY FOAM CONTROL COMPOSITION AND BUILT ANIONIC DETERGENT COMPOSITION CONTAINING SAME

Jack Thomas Inamorato, Westfield, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of applications Ser. No. 41,359 and Ser. No. 41,601, both May 28, 1970. This application May 28, 1970, Ser. No. 41,308

Int. Cl. B01d *19/04;* **C11d** *3/065*

U.S. Cl. 252—524 **25 Claims**



A built anionic detergent composition having an inverse foam-to-temperature relationship is disclosed, as well as a ternary composition for accomplishing this relationship when added to the detergent system. The inverse foam-to-temperature relationship is provided by a synergistic mixture of a C_8–C_{30} fatty acid, a particular group of oxazolines, and a C_{12}–C_{20} polyethoxylated linear alcohol containing from about 10 to 50 moles of ethylene oxide.

3,704,268

CURABLE, SOLID POLYMERS BASED ON CYCLOALIPHATIC POLYEPOXIDES AND A METHOD FOR THE PREPARATION THEREOF

John Wynstra, Somerville, and Thomas B. Gibb, Jr., Murray Hill, N.J., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,030

Int. Cl. C08g *30/00*

U.S. Cl. 260—2 EP **34 Claims**

This invention relates to curable, solid polymers, based on cycloaliphatic polyepoxides, and to a method for the preparation thereof by reacting a liquid cycloaliphatic polyepoxide with a polyfunctional, acidic co-reactant having a pKa value of less than about 8, such as polycarboxylic acid or a polyhydric phenol, in a reaction medium containing a tertiary amine. The curable, solid polymers of this invention can be used in molding, coating and laminating applications and cured to infusible products characterized by excellent properties such as electrical properties.

3,704,269

FOAMS AND PROCESS OF MAKING

Harlan G. Freeman and Maurice F. Gillern, Seattle, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

No Drawing. Filed Jan. 22, 1971, Ser. No. 109,048

Int. Cl. C08j *1/16*

U.S. Cl. 260—2.5 F **16 Claims**

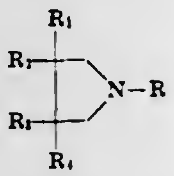
Disclosed herein is a process of making thermosetting cellular foams, and the insoluble infusible foamed products made therefrom for use as insulating barriers in building construction and other applications where light weight insulating materials are needed. A foaming agent is blended into a liquid resin comprising the reaction product of (1) an aldehyde condensation polymer having reactive alkylol groups, modified by a nitrogen-containing compound and (2) an aldehyde or aldehyde-polyepoxide mixture. The resinous compositions form an insoluble, infusible, cured foam in 20 to 200 seconds at room temperature, making them useful in foaming-in-place applications.

3,704,270
PROCESS FOR PREPARING POLYURETHANES

Prella M. Phillips, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Mar. 27, 1970, Ser. No. 23,507
Int. Cl. C08g *22/38*
U.S. Cl. 260—77.5 AC **11 Claims**

A process for preparing polyurethane compositions by reacting a compound having a plurality of active hydrogen atoms with a compound having a plurality of isocyanate or isothiocyanate groups in the presence of, as a catalyst therefor, a copolymer comprising alternating ring-opened units of

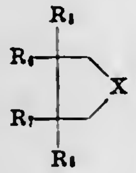
(A) an aziridine of the formula



wherein

(1) R is an inert organic group;
(2) R_1, R_2, R_3 and R_4 are hydrogen, alkyl, aryl or aralkyl groups, at least two of them being hydrogen; and

(B) A vicinal epoxide or episulfide of the formula



wherein

(1) X is oxygen or sulfur;
(2) R_5, R_6, R_7 and R_8 are hydrogen, alkyl, aryl, alkaryl, aralkyl, alkenyl, alkoxyalkyl, alkenyloxyalkyl, or R_6 and R_7 join to form a 5 or 6 membered cycloalkyl group, at least two of them being hydrogen.

3,704,271
POLYOLEFIN-STARCH

Helmut F. Prahl, Middleton, Wis., and Frederick M. Hart, Kent, Wash., assignors to Dynatron Research Corporation, Madison, Wis.
Continuation-in-part of application Ser. No. 735,045, June 6, 1968. This application Oct. 29, 1970, Ser. No. 85,041
Int. Cl. C08f *25/00*
U.S. Cl. 260—17.4 GC **18 Claims**

A polyolefin-modified starch where an olefin is polymerized directly upon the surface of starch to yield a starch/polyolefin composite (SPS). SPS is prepared by polymerizing an olefin monomer on the surface of starch upon which a suitable catalyst has been adsorbed, preferably a catalyst of the Ziegler-Natta type, i.e. an organometallic transition metal catalyst system. These surface polymerized polyolefin starches (SPS) are useful in a wide variety of applications including their use in water-resistant adhesives and binders, paper sizes and coatings, textile sizes, paint extenders, and a wide variety of other uses.

3,704,272
CONCENTRATION OF POLYTETRAFLUOROETHYLENE AQUEOUS DISPERSION

David Alan Holmes, Vienna, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Sept. 15, 1970, Ser. No. 72,497
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 F **10 Claims**

Polytetrafluoroethylene aqueous dispersion having a pH of at least 8.0 is concentrated by dissolving in the dispersion a sufficient amount of an ethoxylated aliphatic alcohol which has a cloud point of no greater than 45° C. to cause the dispersion to form two layers upon heating at temperatures up to 45° C., decanting the upper layer, followed by dissolving in the lower layer sufficient ethoxylated aliphatic alcohol having a cloud point of at least 10° C. greater than that of the first mentioned ethoxylated aliphatic alcohol and in no event less than 50° C.

3,704,273
FLAME RESISTANT LATEX AND EMULSION SYSTEMS AND THE PRODUCTS FORMED THEREFROM

William C. Arney, Jr., St. Albans, W. Va., assignor to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed May 11, 1970, Ser. No. 36,441
Int. Cl. C08g *51/24;* **C09d** *5/18*
U.S. Cl. 260—29.4 R **3 Claims**

Latex and emulsion systems rendered highly flame resistant by treatment with certain phosphorus polyol compounds combined with a flame resistance enhancement agent. Halogen containing (particularly bromine) compounds, such as tetrabromophthalic anhydride, and nitrogen containing compounds, such as dicyanamide, have been found to be extremely effective flame resistance enhancement agents. By the aforementioned treatment of latex and emulsion systems, for example, acrylic crushed foam coatings on fiberglass fabric can be made flame resistant to a degree not achieved heretofore.

3,704,274
METHOD OF INCREASING THE SCORCH LIFE OF BUTYL RUBBER

John E. Callan, Trenton, N.J., assignor to Cities Service Company, New York, N.Y.
No Drawing. Filed Dec. 18, 1970, Ser. No. 99,687
Int. Cl. C08f *41/12, 45/28, 45/58*
U.S. Cl. 260—33.6 AQ **15 Claims**

A solution is prepared of butyl rubber and a phenol curing resin in an organic solvent, and the solvent is then evaporated to provide dry butyl rubber having the resin intimately dispersed therein. Compounds produced from this resin-containing rubber are characterized by a scorch life which is considerably longer than that which is achieved by conventional dry mixing of the rubber with the curing resin. This new process can be used to particular advantage in the manufacture of curing bags which are used to apply internal heat and pressure to pneumatic vehicle tires during the vulcanization thereof.

3,704,275
THERMOPLASTIC MOLDING COMPOSITIONS ON THE BASIS OF POLYOXYMETHYLENES

Karlheinz Burg, Lagenhain, Ernst Wolters, Frankfurt am Main, Harald Cherdron, Wiesbaden, and Hans-Joachim Leugering, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Aug. 3, 1970, Ser. No. 60,722
Claims priority, application Germany, Aug. 7, 1969, P 19 40 132.2
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 AL **11 Claims**

Thermoplastic molding compositions on the basis of polyoxymethylenes are provided which, besides the polyoxymethylenes, may contain polymers of varying composition with a definite size of the particles as dispersed phase and which are nucleated with such an amount of inorganic nucleating agent that the size of the polyoxymethylene spherulites formed under definite conditions is within a limited range. The moulding compositions are suitable for the manufacture of shaped articles of any kind and have improved mechanical properties.

3,704,276
PROCESS FOR THE PREPARATION OF ELASTOMERIC COMPOSITION CONTAINING METHANOL TREATED CARBON BLACK

William W. Gotshall, Orchard Lake, Mich., assignor to Marathon Oil Company, Findlay, Ohio
Filed Aug. 10, 1970, Ser. No. 62,412
Int. Cl. C08c *11/02, 11/18;* **C08d** *9/00*
U.S. Cl. 260—41.5 R 9 Claims

Improvements in physical properties of vulcanizable elastomers containing carbon blacks having pH's below 7, e.g., channel blacks, can be achieved by mixing from about 0.25 to about 10% by weight of methanol with the carbon blacks before compounding of the elastomeric composition.

3,704,277
POLYPHENYL ETHER LUBRICATING COMPOSITIONS

Frank S. Clark, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed May 3, 1971, Ser. No. 139,975
The portion of the term of the patent subsequent to July 18, 1989, has been disclaimed
Int. Cl. C10m *1/24, 1/30*
U.S. Cl. 252—54.6 **5 Claims**

Composition comprising polyphenyl ethers or mixtures thereof and perfluoro aliphatic dibasic acids exhibit improved lubricating properties over wide temperature ranges.

3,704,278
ANIONIC DOPED DIVALENT EUROPIUM CHALCOGENIDES

Merrill W. Shafer, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation-in-part of abandoned application Ser. No. 15,710, Mar. 2, 1970. This application June 22, 1971, Ser. No. 155,595
Int. Cl. C04b *35/50*
U.S. Cl. 252—62.51 **14 Claims**

The invention relates to anionic doped divalent europium chalcogenides. The divalent ions ($O^{=}$, $S^{=}$, $Se^{=}$, or $Te^{=}$) are partially substituted for by monovalent halide ions such as (F^-, Cl^-, Br^-, or I^-) in the magnetically ordered europium chalcogenides. The substitution of halide ions for the chalcogen ions alters the properties of the host chalcogenide in several ways, including, the ferromagnetic Curie temperature, resistivity, metallic-to-semiconducting transition and photomagnetic or photoconductive effects.

3,704,279
PRODUCTION OF HALOGEN-CONTAINING POLYARYL ESTERS

Roshdy Ismail, Neunkirchen, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Postfach, Germany
No Drawing. Filed July 28, 1971, Ser. No. 166,686
Claims priority, application Germany, Aug. 1, 1970, P 20 38 287.0; Apr. 29, 1971, P 21 21 093.5
Int. Cl. C08g *17/003*
U.S. Cl. 260—61 **12 Claims**

In the production of halogen-containing polyaryl esters by the polycondensation of halogen-containing diphenols and aromatic acid dichlorides in the presence of a catalyst comprising a tertiary amine, an acid amide or mixtures thereof, the improvement which comprises effecting the condensation in the presence of about 0.001 to 50 molepercent based on the acid dichloride, of at least one activator selected from the group consisting of magnesium compounds, and oxides, chlorides or hydroxychlorides of Cu, Zr, Sn, Ti, V, Pb and Fe. The condensation is preferably effected in solution, using as activated CuO, CuCl, $ZrCl_4$,$SnCl_2$, $TiCl_4$, $VOCl_3$, PbO, Fe_2O_3 or an alloy of Mg, Cu, Zr, Sn, Ti, V, Pb or Fe. In this manner high molecular weights can be attained in short reaction times.

3,704,280
ANIONIC CATALYTIC POLYMERIZATION OF LACTAMS IN THE PRESENCE OF AN ORGANIC ISOCYANATE AND A POLYETHER

Jozef L. M. van der Loos, Rijksweg Z, 146, and Peter J. M. W. Claassen, Eisenhowerstraat 373, both of Sittard, Netherlands
No Drawing. Filed Mar. 25, 1970, Ser. No. 22,684
Claims priority, application Netherlands, Mar. 25, 1969, 6904544
Int. Cl. C08g *20/10*
U.S. Cl. 260—77.5 AM **6 Claims**

A process is disclosed for the anionic catalytic polymerization of lactams or mixtures of lactams in which an isocyanate compound is used as a promoter conducted in the presence of a polyether soluble in molten lactam. The resulting polymerization reaction occurs rapidly in the order of minutes, producing a polyamide of very high impact strength.

3,704,281
MOLDING MATERIALS BASED ON EPOXIDE COMPOUNDS AND PROCESS

Herbert Saran and Manfred Budnowski, Dusseldorf-Holthausen, Germany, assignors to Henkel & Cie. GmbH, Dusseldorf-Holthausen, Germany
No Drawing. Continuation of abandoned application Ser. No. 753,782, Aug. 19, 1968. This application Mar. 8, 1971, Ser. No. 122,174
Claims priority, application Germany, Sept. 2, 1967, H 63,774
Int. Cl. C08g *30/02, 30/12, 30/14*
U.S. Cl. 260—77.5 NC **4 Claims**

This invention relates to a hardenable molding material based on organic compounds containing more than one epoxide group in the molecule consisting of (1) a prereaction product of (a) a mixture of organic compounds containing more than one epoxide group in the molecule, said mixture containing from 66⅔% to 100% of crystalline triglycidyl isocyanurate, and (b) an amine in such a proportion that from 8% to 30% of the epoxide groups in said mixture of organic compounds is reacted with the amine groups of said amine and (2) an epoxide resin hardener. The invention also relates to the process of preparing said prereaction product and the hardened epoxide resin produced from said molding material.

3,704,282
CATECHOLAMINE ANTIGENS AND ANTIBODIES SPECIFIC THEREFOR

Sidney Spector, 12 Troy Drive, Livingston, N.J. 07039
No Drawing. Continuation-in-part of application Ser. No. 826,268, May 20, 1969. This application Apr. 9, 1971, Ser. No. 132,823
Int. Cl. C08g *20/38;* **C08h** *1/00*
U.S. Cl. 260—78 A **6 Claims**

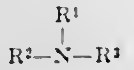
Catecholamine antigens are prepared by coupling catecholamine haptens to immunogenic carrier materials. In preferred embodiments, proteins or polypeptides are used as carrier materials. These antigens produce immunological effects when injected into host animals, including the formation of anticatecholamine antibodies.

These resulting antibodies are useful in bioanalytical techniques for the determination of catecholamine based activity in biological systems.

3,704,283
PROCESS FOR THE PRODUCTION OF SULPHUR-MODIFIED POLYCHLOROPRENES WITH IMPROVED STORAGE LIFE

Rudolf Mayer-Mader, Cologne, and Ernst Schwinum, Leichlingen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Jan. 5, 1971, Ser. No. 104,131
Claims priority, application Germany, Jan. 24, 1970, P 20 03 147.4
Int. Cl. C08g *33/00*
U.S. Cl. 260—79 **6 Claims**

A process for the production of sulphur-modified chloroprene polymers by emulsion polymerising chloroprene, 0 to 20% by weight, based on total monomers, of an ethylenically unsaturated copolymerisable compound, and 0.1 to 2% by weight, based on total monomers of sulphur wherein the copolymerisation reaction is carried out in the presence of from 0.5 to 5% by weight, based on total monomers of a water-soluble amine of the formula

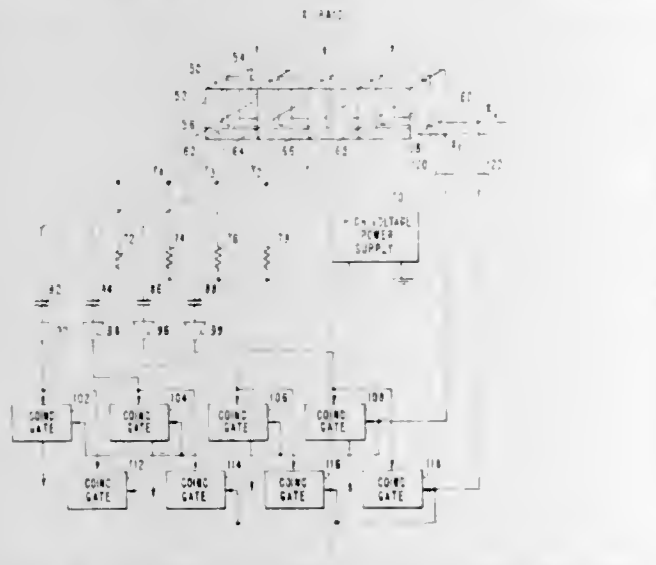


$$R^2—\overset{R^1}{\overset{|}{N}}—R^3$$

in which R^1 and R^2 each represents an hydroxyalkyl group with 2 to 5 carbon atoms and R^3 has the same meaning as R^1 and R^2 or represents a methyl group.

3,704,284
X-RAY POSITION DETECTOR

Gordon Garmire, Pasadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.
Filed Dec. 4, 1970, Ser. No. 95,217
Int. Cl. G01t *1/18;* **H01j** *39/28*
U.S. Cl. 250—83.6 R **6 Claims**



A set of proportional counters has been arranged into an array which can detect and indicate the position of an X-ray interaction within the array, in the X–Y plane.

3,704,285
DISPERSION POLYMERIZATION OF TETRAFLUOROETHYLENE

Verleon Henry Porter, Parkersburg, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation-in-part of application Ser. No. 812,294, Apr. 1, 1969. This application July 19, 1971, Ser. No. 163,877
Int. Cl. C08f *1/13, 3/24, 15/06*
U.S. Cl. 260—87.5 A **15 Claims**

A polymerization process for preparing an aqueous dispersion of polytetrafluoroethylene resins involving using both a hydrocarbon-based surfactant and a fluorocarbon-based surfactant as nucleators for polymerization followed by subsequent injection of chlorendic acid as stabilizer as the polymerization proceeds to normal final solids content. The resultant dispersion upon coagulation and drying yields products capable of being paste-extruded into tapes, etc., of a higher tensile strength for a given reduction ratio and extrusion pressure than previously attainable directly.

3,704,286
PRODUCTION OF UNSATURATED POLYMERIC HYDROCARBONS HAVING HIGH MOONEY VISCOSITIES

Johannes Schafer, Gerhard Berg, and Kurt Benedikter, Marl, Germany, assignors to Chemische Werke Huls, AG, Marl, Germany
Continuation of applications Ser. No. 513,622, July 30, 1965, and Ser. No. 804,372, Feb. 26, 1969. This application Dec. 29, 1969, Ser. No. 888,155
Claims priority, application Germany, July 30, 1964, P 14 95 370.9
Int. Cl. C08d *5/04, 5/02*
U.S. Cl. 260—94.7 R **9 Claims**

To increase the molecular weight of unsaturated polymeric hydrocarbons, such as butadiene, produced on the basis of Ziegler-type catalysts, after the termination of polymerization or the desired conversion has been reached, adding to the resultant reaction solution a compound of the formula RX wherein

R is a residue selected from the group consisting of halogeno, alkyl, cycloalkyl, aryl, aralkyl, acyl thionyl, sulfuryl, chromyl, vanadyl, phosphorus oxy, thiophosphorus, sulfonic acid, sulfinic acid, arsenic oxy, antimony oxy, titanyl, and imide, or a component selected from the group consisting of phosphorus, arsenic, sulfur, selenium, silicon, and tin, and
X represents at least one halogen atom.

3,704,287
HIGH TEMPERATURE REDUCED CATALYST AND PROCESS

Robert Norman Johnson, Basking Ridge, N.J., assignor to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed Sept. 17, 1970, Ser. No. 73,184
Int. Cl. C08f *1/42, 3/06*
U.S. Cl. 260—94.9 DA **59 Claims**

An improved catalyst useful for preparing high density olefin polymers in improved yields, and in some cases, with reduced swell properties, is prepared by depositing a chromate ester catalyst on activated silica and then treating the resulting composition with selected organo-metallic reducing agents at elevated temperatures.

3,704,288
L-TYROSYL-1-AMINOCYCLOPENTANE-1-CARBONYL-L-PHENYLALANINE

Joseph A. Skorcz, 5359 N. Bay Ridge Ave., Milwaukee, Wis. 53217
No Drawing. Filed Apr. 16, 1970, Ser. No. 29,298
Int. Cl. C07c *103/52;* **C07g** *7/00*
U.S. Cl. 260—112.5 **1 Claim**

The compounds are novel peptides composed of an N-terminal-L-tyrosine moiety and a C-terminal-L-phenylalanine moiety joined by a 1-aminocyclopentane-1-carboxylic acid group or a 1-aminocyclohexane-1-carboxylic acid. The compounds are useful as hypotensive agents. Representative of the compounds disclosed are dicarbobenzoxy-L-tyrosyl-1-aminocyclopentane - 1 - carbonyl-L-phenylalanine methyl ester and L-tyrosyl-1-aminocyclopentane-1-carbonyl-L-phenylalanine.

3,704,289
INTERMEDIATES FOR MAKING LINCOMYCINS AND PROCESS FOR PREPARING THE SAME

Barney J. Magerlein, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Continuation-in-part of application Ser. No. 867,362, Oct. 17, 1969. This application May 6, 1970, Ser. No. 35,255
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 R **3 Claims**

Lincomycin is formed by tosylating methyl 1-thio-α-D-galactooctopyranoside to form methyl 6-O-(p-toluenesulfonyl)-1-thio-α-D-galactopyranoside, acylating the resulting compound to form the peracylate, replacing the tosyl group with iodine to form peracylated methyl 6-deoxy-6-iodo - 1 - thio-α-D-galactopyranoside, replacing the iodo group by a nitro group to form peracylated methyl 6-deoxy-6-nitro-1-thio-α-D-galactopyranoside, treating the latter with acetaldehyde and sodium methoxide to form methyl 6 - deamino-6-nitro-α-thiolincosaminide, reducing the latter with lithium aluminum hydride to form methyl α-thiolincosaminide, and acylating the latter with trans-1-methyl-4-propyl-L-2-pyrrolidinecarboxylic acid. By substituting other aldehydes and/or other 1-thio-α-D-galactopyranosides, analogs of lincomycin are obtained.

3,704,290
6-(1 - SUBSTITUTED AMINOCYCLOALKANECARBOXAMIDO)-PENICILLANIC ACID AND SALTS

Joseph P. Hou and John W. Poole, Montgomery, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Continuation-in-part of abandoned application Ser. No. 37,911, May 15, 1970. This application Dec. 9, 1970, Ser. No. 96,653
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 **7 Claims**

Novel sulfonylated penicillins have been prepared which have antibacterial activity and are useful for the treatment of mastitis in cattle and for the treatment of infections caused by susceptible microorganisms.

3,704,291
PENICILLINS DERIVED FROM THE REACTION OF ENAMINES WITH 6-ISOCYANATO PENICILLANIC ACID

Milton Wolf, West Chester, James L. Diebold, Havertown, and Stanley C. Bell, Penn Valley, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Filed Dec. 17, 1969, Ser. No. 886,021
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 **3 Claims**

Novel penicillanic acid derivatives possessing antibacterial activity have been prepared by the reaction of an enamine with 6-isocyanatopenicillanic acid trimethylsilyl ester.

3,704,292
SEMICARBAZIDOPENICILLINS

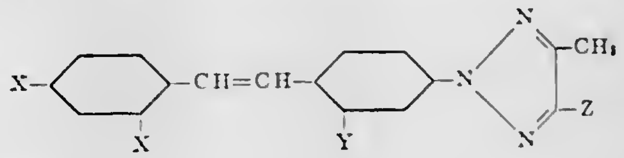
Milton Wolf, West Chester, James L. Diebold, Havertown, Peter B. Russell, Villanova, and Stanley C. Bell, Penn Valley, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Filed Dec. 17, 1969, Ser. No. 885,999
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 **8 Claims**

Novel substituted semicarbazidopenicillanic acid derivatives have been prepared which are useful antibacterial agents.

3,704,293
5-METHYL-2-(STYRYLPHENYL)-4-TRIAZOLECARBOXAMIDE BRIGHTENERS

Albert F. Strobel and Maynard L. Whitehouse, Delmar, N.Y., assignors to GAF Corporation, New York, N.Y.
No Drawing. Filed June 17, 1970, Ser. No. 47,177
Int. Cl. C07d *55/02*
U.S. Cl. 260—240 C **13 Claims**

A new class of brightening compounds having the formula:



wherein

one X represents hydrogen and the other X represents a lower alkoxy or a lower alkoxy which is substituted by the groups: $—CONH(CH_2)_{1-2}CH_2NRR_1$ and

$$—OCO(CH_2)_{1-2}CH_2NRR_1$$

in which R and R_1 represent hydrogen, lower alkyl, amine-substituted alkyl, cyclohexyl, benzyl and phenyl;
Y represents hydrogen, halogen, cyano, or a carboxamide or sulfonamide substituent, such as $CONR_2R_3$ or $SO_2NR_2R_3$; R_2 and R_3 represents hydrogen, lower alkyl, cyclohexyl, benzyl, phenyl, and when R_2 is lower alkyl it may be further substituted by $—CH_2NRR_1$;
Z is $—CONR_2R_3$; and
at least one of X, Y and Z must contain the grouping $—CH_2NRR_1$;

which compounds are particularly well suited for usage as fluorescent brightening agents in connection with fibrous foils and molds of polyacrylonitrile and related products.

3,704,294
PROCESS FOR PREPARING 6-AMINOPENICILLANIC ACID COMPOUNDS

Yukichi Kishida, Nobuo Soma, Junichi Nakazawa, Yoshio Sato, Hidebumi Matsuda, Atsusuke Terada, Taiichiro Watanabe, Yukio Sugimura, Toshihide Miyamura, and Masanao Kaneko, Tokyo, Japan, and Mitsuo Watatani, deceased, late of Tokyo, Japan, by Takako Watatani, heiress, Yokohama, Japan, assignors to Sankyo Company Limited, Tokyo, Japan
No Drawing. Filed Mar. 19, 1970, Ser. No. 21,180
Claims priority, application Japan, Mar. 25, 1969, 44/22,553; Mar. 29, 1969, 44/24,207
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 **10 Claims**

Improved production of a 3-phenyl-5-methyl-4-isoxazolylpenicillin compound, useful as antibacterial agents, is effected by reacting a 1-tetrolylcycloheptaimidazol-2(1H)-one with a benzonitrile N-oxide compound to form a 1-[3-phenyl - 5 - methylisoxazole - 4 - carbonyl]cycloheptimidazol-2(1H)-one compound and then reacting said compound with 6-aminopencillanic acid.

3,704,295
STEROIDO[3,2-c]PYRAZOLES AND PREPARATION THEREOF

Raymond O. Clinton, East Greenbush Township, Rensselaer County, N.Y., assignor to Sterling Drug Inc., New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 723,148, Mar. 24, 1958. This application Feb. 16, 1959, Ser. No. 793,292
Int. Cl. C07c *173/10*
U.S. Cl. 260—239.5 **24 Claims**

This invention relates to heterocyclic substituted steroids, and in particular it is concerned with steroido

[3,2-c]pyrazoles and the preparation thereof, and to intermediates in the preparation thereof.

3,704,296
SUBSTITUTED THIAZOLIDINE-4-ONES

Max J. Mousseron, Montpellier, France, assignor to Etablissements Clin-Byla, Paris, France

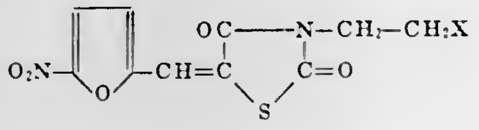
No Drawing. Continuation-in-part of application Ser. No. 733,808, June 3, 1968, now Patent No. 3,678,041, dated July 18, 1972. This application May 25, 1971, Ser. No. 146,832

Claims priority, application France, June 6, 1967, 109,263

Int. Cl. C07d *91/14*

U.S. Cl. 260—240 A **3 Claims**

Highly active antibacterials are described which are 5-substituted thiazolidine-4-ones having formula



in which X is Cl or Br. Tests are described in which activity against a large number of gram positive and gram negative bacteria are reported.

3,704,297
7 - (1,4 - CYCLOHEXADIENYLACYLAMIDO)CEPHALOSPORANIC ACIDS AND RELATED COMPOUNDS

William Dvonch, Radnor, and Harvey E. Alburn, West Chester, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 23,099, Apr. 6, 1970, which is a continuation-in-part of application Ser. No. 843,801, July 22, 1969, both now abandoned. This application Mar. 5, 1971, Ser. No. 121,592

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **5 Claims**

This invention concerns 7-(1,4-cyclohexadienylacylamido)cephalosporanic acids, related compounds and the salts thereof which have potent antibiotic activity particularly against penicillin resistant staphylococci.

3,704,298
4-ACYLOXY-3-(2-ISOXAZOLOCARBAMYL)-2H-1,2-BENZOTHIAZINE 1,1-DIOXIDES

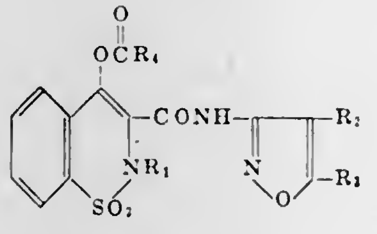
Harold Zinnes, Rockaway, Martin L. Schwartz, Gillette, and John Shavel, Jr., Mendham, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed June 22, 1971, Ser. No. 155,605

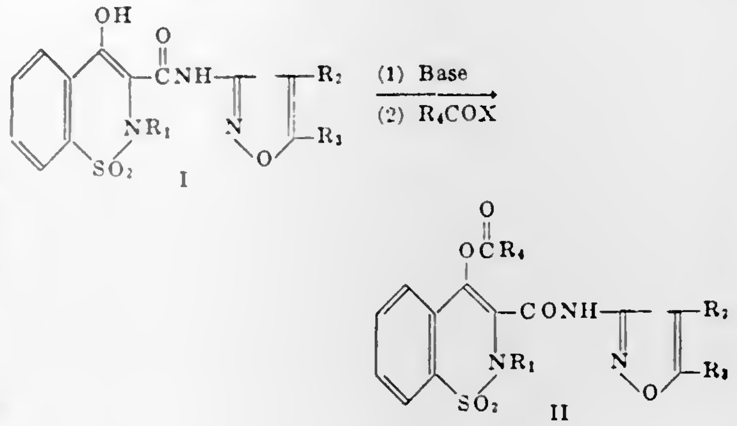
Int. Cl. C07d *93/02*

U.S. Cl. 260—243 R **1 Claim**

Compounds of the formula



are disclosed, wherein R_1 is alkyl; R_2 and R_3 are hydrogen or alkyl and R_4 is alkyl, aryl, aralkyl, heterocyclic or alicyclic. They are prepared in accordance with the following reaction scheme:



These compounds are useful as anti-inflammatory agents, antipyretics and analgesics.

3,704,299
5-OXOMORPHOLINYL-2,1-BENZISOTHIAZOLINES

Joseph A. Skorcz, 5359 N. Bay Ridge Ave., Milwaukee, Wis. 53217; and John T. Suh, 3709 W. Scenic Drive; and Claude I. Judd, 10904 N. Crestline Road, 39–W, both of Mequon, Wis. 53092

No Drawing. Continuation-in-part of application Ser. No. 798,119, Feb. 10, 1969. This application July 14, 1971, Ser. No. 162,641

Int. Cl. C07d *87/46*

U.S. Cl. 260—247.1 **5 Claims**

The compounds are 5 - oxomorpholinyl - 2,1 - benzisothiazoline-2,2-dioxides useful as central nervous system depressants. The compounds are also useful as intermediates in the preparation of the corresponding 5-morpholinyl-2,1-benzisothiazolines. A compound disclosed is 1-methyl - 5 - (4 - benzyl - 5 - oxo - 2 - morpholinyl)-2,1-benzisothiazoline-2,2-dioxide.

3,704,300
IMIDAZO(2,1-a)PHTHALAZINES

Goetz E. Hardtmann, Florham Park, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of application Ser. No. 785,765, Dec. 20, 1968. This application Apr. 9, 1971, Ser. No. 132,869

Int. Cl. C07d *51/06*

U.S. Cl. 260—250 A **14 Claims**

This invention discloses novel compounds which are imidazo(2,1-a)phthalazines and methods of preparation, said imidazo(2,1-a)phthalazines being useful by reason of exhibiting pharmacological activity in animals, e.g., as hypotensives.

3,704,301
4-(5-NITROFURYL)PYRIMIDINES

Herbert Berger, Mannheim-Kafertal, Rudi Gall, Grossachsen, Hartmut Merdes, Heidelberg, Kurt Stach, Mannheim-Waldhof, Wolfgang Voemel, Mannheim, and Winfriede Sauer, Mannheim-Wallstadt, Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim, Germany

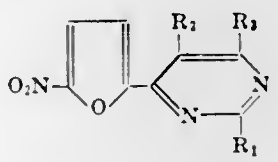
No Drawing. Filed June 4, 1969, Ser. No. 830,489

Claims priority, application Germany, July 9, 1968, P 17 70 831.5

Int. Cl. C07d *51/38*

U.S. Cl. 260—251 R **6 Claims**

5-nitrofuran derivatives and the physiologically acceptable salts thereof having the formula:



wherein R_1 and R_2 are each hydrogen, lower alkyl, alkoxy, amino or acylamino and R_3 is hydrogen, hydroxyl, lower alkoxy, amino or acylamino are characterized by marked antimicrobial activity and have been found to be particularly effective in the treatment of urinary tract infections.

3,704,302
CERTAIN CUMARIN QUINAZOLINONES

Sigeharu Enomoto, Hyogo, Katsunobu Sato, Osaka, and Goichi Suzuki, Hyogo, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

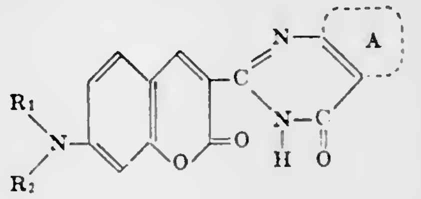
No Drawing. Filed Feb. 10, 1970, Ser. No. 10,296

Claims priority, application Japan, Apr. 18, 1969, 44/30,600; Aug. 22, 1969, 44/66,793; Oct. 4, 1969, 44/79,295; Nov. 13, 1969, 44/91,217; Dec. 27, 1969, 45/1,868

Int. Cl. C07d *99/04*

U.S. Cl. 260—256.4 Q **6 Claims**

Compounds of the formula



wherein R_1 and R_2 each represent a hydrogen atom or a substituted or unsubstituted alkyl or a cycloalkyl group, or R_1 and R_2 can form a heterocyclic ring together with the nitrogen atom attached to the cumarin residue, and ring A represents a substituted or unsubstituted benzene ring or a naphthalene ring are disclosed. They can be employed for dyeing hydrophobic fibers a clear yellow tone with good fastnesses.

3,704,303
6,7,8,9 - TETRAHYDROPYRIMIDO[2,1-b] - BENZOTHIAZOLE-6-CARBOXYLIC ACID, ALKYL ESTERS

Peter H. L. Wei, Springfield, Pa., assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Mar. 17, 1971, Ser. No. 125,375

Int. Cl. C07d *99/10*

U.S. Cl. 260—256.5 R **1 Claim**

A novel series of compounds is described which are pharmacologically active as antiinflammatory agents. The compounds are characterized as the lower alkyl esters of 6,7,8,9-tetrahydropyrimido[2,1-b]-benzothiazole - 6 - carboxylic acid.

3,704,304
5(7)-ACETAMIDO-3-(SUBSTITUTEDPHENYL)-2,3-DIHYDRO - 3-HYDROXY-7(5)H-THIAZOLO(3,2-ALPHA)PYRIMIDINE - 2 - ALKANOIC ACID, ALKYL ESTERS

Peter H. L. Wei, Springfield, and Stanley C. Bell, Penn Valley, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Mar. 17, 1971, Ser. No. 125,376

Int. Cl. C07d *99/10*

U.S. Cl. 260—256.5 R **2 Claims**

A novel series of compounds are described which are biologically active as inhibitors of *Mycobacterium tuberculosis*. The compounds are characterized as (5(7)-acetamido - 3 - (substitutedphenyl) - 2,3 - dihydro - 3 - hydroxy - 7(5) - oxo - 7(5)H - thiazolo[3,2 - a]pyrimidine-2-alkanoic acid, alkyl esters.

3,704,305
N-(γ-PHENYLPROPYL)-N′-(SUBSTITUTED)-PIPERAZINES

Claude P. Fauran, Michel J. Turin, and Guy M. Raynaud, Paris, and Bernard M. Pourrias, Meudon, France, assignors to Delalande S.A., Courbevoie (Hauts-de-Seine), France

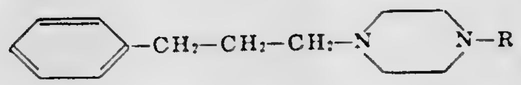
No Drawing. Filed Aug. 19, 1969, Ser. No. 851,483

Claims priority, application Great Britain, Sept. 4, 1968, 41,965/68

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 R **3 Claims**

A compound of the formula



wherein R is alkoxy carbonylalkyl, cyanoalkyl, or hydroxyalkyl substituted by phenyl or phenyl substituted by alkoxy.

The compounds are prepared by reacting 1-bromo-3-phenylpropane with piperazine substituted with R. The compounds possess hypotensive, vasodilatory, adrenolytic, spasmolytic and diuretic properties.

3,704,306
ADAMANTANE-1,3-DICARBOXYLIC ACID ESTERS

Carl Peter Krimmel, Wauconda, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 631,181, Apr. 17, 1967. This application Jan. 26, 1970, Ser. No. 5,989

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 PA **8 Claims**

Dialkylaminoalkyl and related esters of adamantane-1,3-dicarboxylic acid and adamantane-1,3-diacetic acid are described. They are useful as antifungal and anti-viral agents. The compounds are prepared by the reaction of the approproate dicarboxylic acid with a dialkylaminoalkyl halide or they can be prepared by the reaction of the appropriate dicarboxylic acid halide with a dialkylaminoalkanol or similar compound.

3,704,307
PROCESS FOR THE PREPARATION OF 3-CHLORO-4-METHOXY-PHENYLISOCYANATE

Wilfried Zecher, Cologne, Engelbert Kuhle, Bergisch Gladbach, and Hans Holtschmidt, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 5, 1969, Ser. No. 882,747

Claims priority, application Germany, Dec. 12, 1968, P 18 14 251.3

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 P **10 Claims**

Chlorinating 4-methoxy-phenylisocyanate with a chlorinating agent, e.g. elementary chlorine, at a temperature of about −10 to 140° C., optionally in the presence of an inert solvent, e.g. a chlorinated hydrocarbon or thionyl chloride, to form the known 3-chloro-4-methoxy-phenylisocyanate which is a valuable intermediate for the production of herbicides.

3,704,308
BORON-CONTAINING HIGH MOLECULAR WEIGHT MANNICH CONDENSATION

Edmund J. Piasek, Chicago, Ill., and Robert E. Karll, Munster, Ind., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 502,368, Oct. 22, 1965. This application Apr. 14, 1969, Ser. No. 816,125

Int. Cl. C07f *5/04*

U.S. Cl. 260—462 R **5 Claims**

Oil-soluble boron-containing derivatives of Products of Mannich condensation from reactants (1) a high molecular weight alkyl-substituted hydroxyaromatic compound whose alkyl substituent has upward from 40 to 20,000 carbon atoms, (2) a lower alkyl-substituted phenol whose alkyl group has 2 to 20 carbon atoms, (3) an amine which contains an HN< group, and (4) an aldehyde in the respective molar ratio of 1.0:0–7:0.1–10:1.0–10 wherein the boron content expressed as a boron to nitrogen weight ratio (B/N) is in the range of 0.15–5:1.0. The boron derivatives as solutes in weight concentrations of 0.05 to 70 percent dissolved in mineral oil of the lubricating oil types are useful as crankcase lubricating compositions, concentrates for fortifying used crankcase lubricating composition and for preparation of crankcase lubricating compositions. Those boron derivatives provide detergency, dispersancy and anti-oxidant properties to lubricating oils.

3,704,309

METHOD OF PREPARATION OF SUBSTITUTED DIARYL OXALATES

Donald Roy Maulding, Branchburg Township, Somerset County, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Jan. 27, 1971, Ser. No. 110,295

Int. Cl. C07c *69/36*

U.S. Cl. 260—479 S **8 Claims**

Method for producing diaryl oxalates by reaction of tetrachloroethylene carbonate and substituted phenols. The aryl oxylate compounds obtain chemiluminescent light when reacted with other necessary chemiluminescent reactants in the direct generation of light from chemical energy. By "light" as referred to herein is meant electromagnetic radiation at wavelength falling between about 350 mμ and about 1,000 mμ.

3,704,310

CHLORAL COMPOUNDS

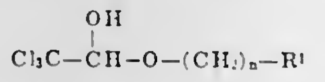
Adolf Fischer, Mutterstadt, Friedrich Becke, Heidelberg, and Reinhold Kohlhaupt, Frankenthal, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Original application May 14, 1969, Ser. No. 824,661. Divided and this application Jan. 6, 1971, Ser. No. 104,493

Int. Cl. C07c *125/06*

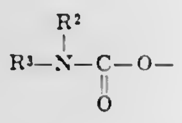
U.S. Cl. 260—482 C **2 Claims**

New and valuable chloral compounds having the formula:



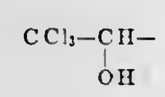
$$\mathrm{Cl_3C-\overset{\overset{OH}{|}}{C}H-O-(CH_2)_n-R^1}$$

in which R^1 denotes the radical



$$\mathrm{R^3-\overset{\overset{R^2}{|}}{N}-\underset{\underset{O}{\|}}{C}-O-}$$

n denoting one of the integers from 1 to 6, R^2 denotes hydrogen or a lower alkyl radical or alkenyl radical and R^3 denotes hydrogen or the trichloroethylol radical



$$\mathrm{CCl_3-\underset{\underset{OH}{|}}{C}H-}$$

3,704,311

FUNCTIONAL BIS(PERFLUOROALKYL-SULFONYL)ALKYL COMPOUNDS

Robert J. Koshar, Lincoln Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Mar. 14, 1969, Ser. No. 807,408

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 H **3 Claims**

Bis(perfluoroalkanesulfonyl)substituted methanes possessing reactible groups such as halogen, hydroxyl, carboxyl or ester groups or possessing carbon-to-carbon unsaturation are provided. The residual hydrogen of the methane is relatively acidic and the compounds form metallic and organic salts which are recoverable. The molecule with acid hydrogen can be further reacted by the reactible group to incorporate an acidic hydrogen in another molecule such as a polymer. The acidic hydrogen effects absorption of basic vapors such as ammonia, amines, etc. Bis(perfluoroalkylsulfonyl) bromomethanes add to olefinic double bonds.

3,704,312

BIALICYCLIC AMINO ACIDS

Peter B. Russell, Villanova, Horace Fletcher III, Pottstown, and Harvey E. Alburn, West Chester, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Oct. 30, 1970, Ser. No. 85,748

Int. Cl. C07c *101/04*

U.S. Cl. 260—514 R **12 Claims**

The compounds are bialicyclic amino acids which are useful as anti-inflammatory agents in warmblooded animals. The compounds are also useful, when their amino groups are properly blocked, for reacting with 6-aminopenicillanic acid, or derivatives thereof, to prepare penicillins having antibiotic activity, or as intermediates in the preparation of their corresponding N-carboxyanhydrides which may be reacted directly with 6-aminopenicillanic acid, or derivatives thereof, to prepare said penicillins.

3,704,313

p-CYCLOHEXYLPHENYLGLYCOLIC ACID AND DERIVATIVES THEREOF

Julius Diamond, Lafayette Hill, Pa., assignor to William H. Rorer Inc., Washington, Pa.

Filed Oct. 10, 1968, Ser. No. 767,058

Int. Cl. C07c *65/14*

U.S. Cl. 260—520 **6 Claims**

The compounds of this invention are non-steroids. When administered to mammals, they afford significant inhibition in the development of inflammation from polyarthritis and manifest significant analgesic and antipyretic activities in the treated mammal.

3,704,314

(1-OXO-2-ALKYLIDENEINDANYLOXY) AND (1-OXO - 2 - ALKYLIDENEINDANYLTHIO) ALKANOIC ACIDS

Edward J. Cragoe, Jr., Lansdale, and Otto W. Woltersdorf, Jr., Chalfont, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Nov. 25, 1968, Ser. No. 778,840

Int. Cl. C07c *69/26*

U.S. Cl. 260—520 **11 Claims**

(1 - oxo - 2-alkylideneindanyloxy) and (1-oxo-2-alkylideneindanylthio)alkanoic acid products and salts, esters

and amide derivatives thereof wherein the 1-oxo-2-alkylideneindanyl ring may be substituted by various radicals are disclosed. The products may be prepared by four routes: (1) via the dehydrohalogenation of a [1-oxo-2-halo-2-alkylindanyloxy (or thio)]alkanoic acid; (2) via the hydrolysis of a [1-oxo-2-alkylideneindanyloxy (or thio)]alkanoic acid ester; (3) via the etherification of a hydroxy (or mercapto)-2-alkylidene-1-indanone, or (4) when the alkylidene moiety is methylene, via the Mannich reaction by treating a [1-oxoindanyloxy (or thio)] alkanoic acid with a salt of a secondary amine in the presence of formaldehyde or paraformaldehyde followed by treatment of the Mannich intermediate with a weak base. The products thus obtained are diuretics and saluretics useful in the treatment of edema and hypertension.

3,704,315

DIALKYLSALICYLIC ACIDS AND ALKALINE EARTH METAL SALTS THEREOF

Aart Strang, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Dec. 17, 1969, Ser. No. 885,982

Claims priority, application Great Britain, Dec. 19, 1968, 60,355/68

Int. Cl. C07c *65/12*

U.S. Cl. 260—521 R **4 Claims**

Alkylsalicylic acids having a high degree of para-substitution and having the alkyl group attached to the benzene nucleus by a quaternary carbon atom are prepared from tertiary alkylating agents and in particular by a two stage alkylation of phenol using a straight chain monoolefin in the first stage and a branched monoolefin in the second stage. The polyvalent metal salts of said acids are excellent lubricant and fuel additives characterized by improved high temperature performance, the ability to keep the interior of engine cylinders clean and to counteract deposition of carbonaceous matter on pistons and piston ring grooves.

3,704,316

PREPARATION OF AMINO ACIDS BY HYDROLYSIS OF BACTERIAL CELLS OBTAINED BY FERMENTATION

Takemi Hanaoka, Toshiro Kakehashi, and Ryota Toyomasu, Saga-shi, and Tomio Yata, Yokohama-shi, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Filed Jan. 13, 1970, Ser. No. 2,679

Int. Cl. C07c *99/02*

U.S. Cl. 260—527 N **3 Claims**

When bacterial cells obtained in the production of amino acids by a fermentation process are hydrolyzed with hydrochloric acid, humins are formed and have to be removed by filtration when other constituents of the cells are to be recovered. The filtration time is sharply reduced if the hydrolysis is carried out in the presence of an oxidizing agent.

3,704,317

PRODUCTION OF ACETIC ACID

Takashi Yamashita, Yugo Chida, Sadayoshi Ninagawa, and Tetsuya Kato, Kanagawa-ken, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Filed Apr. 11, 1969, Ser. No. 816,060

Claims priority, application Japan, Apr. 26, 1968, 43/28,080

Int. Cl. C07c *53/08, 51/32*

U.S. Cl. 260—533 R **14 Claims**

Acetic acid is formed in high yield from iso-butene as well as from n-butene by gas phase oxidation using a vanadium catalyst containing one or more of the secondary elements Li, B, Si, Cr, Fe, Ni, Zn, Zr, Nb, Ru, Rh, Ta and Bi.

3,704,318

PROCESS FOR THE PRODUCTION OF N-CARBAMIDES OF AMINO ACIDS CONTAINING THIOL GROUPS

Adolf F. Stark, Munich, Allach, and Winfried Kolbeck and Friedrich J. Bayerlein, Munich, Germany, assignors to Diamalt Aktiengesellschaft, Munich, Germany

No Drawing. Filed June 29, 1966, Ser. No. 561,385

Int. Cl. C07c *149/24*

U.S. Cl. 260—534 S **6 Claims**

The process for the preparation of N-carbamides of thiol amino acids by reacting the amino acid with salts of cyanic acid in a basic medium.

3,704,319

PRODUCTION OF CARBOXYLIC ACIDS

Paul H. Washecheck and Charles M. Stark, Ponca City, Okla., and Clyde E. Bishop, Indianapolis, Ind., assignors to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed Feb. 22, 1971, Ser. No. 117,796

Int. Cl. C07c *51/24*

U.S. Cl. 260—540 **9 Claims**

Straight chain ester compounds derived from alcohols and organic acids are oxidized by contact with nitric acid at a temperature of from about 40° C. to about 110° C. to yield straight chain carboxylic acids. At relatively high temperatures within the operative temperature range, good yields of carboxylic acids containing 1 less carbon atom than the alcohol moiety of the ester starting material are realized. As the temperature at which the nitric acid oxidation is carried out is decreased, the distribution of the carboxylic acid products derived from the alcohol moiety of the ester shifts to favor the production of carboxylic acids containing the same number of carbon atoms as contained by the alcohol moiety of the ester.

3,704,320

DETERGENT FORMULATIONS

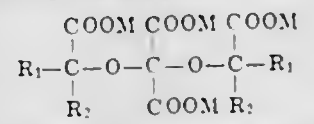
Kent P. Lannert, Freeburg, Ill., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 30, 1971, Ser. No. 158,602

Int. Cl. C11d *1/38, 1/12*

U.S. Cl. 252—546 **6 Claims**

Compounds having the formula



$$\mathrm{R_1-\underset{\underset{R_2}{|}}{\overset{\overset{COOM}{|}}{C}}-O-\underset{\underset{COOM}{|}}{\overset{\overset{COOM}{|}}{C}}-O-\underset{\underset{R_2}{|}}{\overset{\overset{COOM}{|}}{C}}-R_1}$$

wherein M is an alkali metal or ammonium and R_1 and R_2 are hydrogen or methyl in combination with surfactants provide effective detergent formulations.

3,704,321

POLYOXYALKYLENE BIS-THIOUREA EXTREME PRESSURE AGENTS AND METHODS OF USE

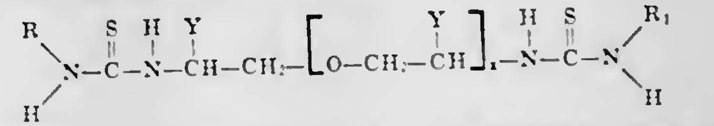
Thomas J. Kmet, Midlothian, and Jon A. Loboda, Chicago, Ill., assignors to The Richardson Company, Melrose Park, Ill.

No Drawing. Filed May 24, 1971, Ser. No. 146,535

Int. Cl. C07c *157/00*

U.S. Cl. 260—552 R **6 Claims**

Novel substituted and unsubstituted polyoxyalkylene bis-thioureas having the formula:

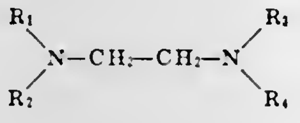


wherein x is a number from 1 to 10, R and R_1 are selected from the group consisting of hydrogen, alkyl and alkenyl, Y is hydrogen or lower alkyl, are useful as extreme pressure lubricants in metal working fluids and particularly in aqueous type fluids. Compositions comprising the thioureas and a boundary lubricant provide the anti-weld and friction reduction properties necessary for heavy duty machining.

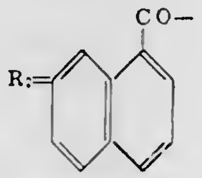
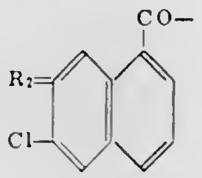
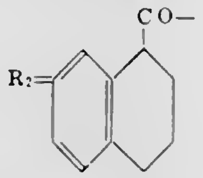
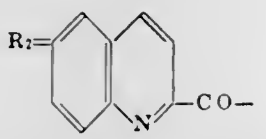
3,704,322
N-ALKYL-N'-(1-NAPHTHOYL) ETHYLENE DIAMINES

Mario Giannini, Florence, Italy, assignor to Malesci S.A.S. Istituto Farmacobiologico, Florence, Italy
No Drawing. Filed Feb. 18, 1970, Ser. No. 12,475
Claims priority, application Italy, Sept. 24, 1969, 40,263/69
Int. Cl. C07c *103/30*
U.S. Cl. 260—558 R **1 Claim**

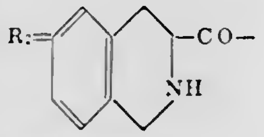
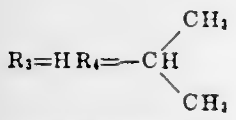
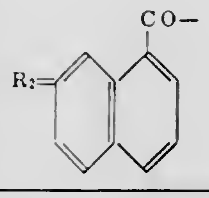
Process for preparing ethylene diamine derivatives of the general formula:



where:

R_1=H		$R_3=R_4=-C_2H_5$
R_1=nC_4H_9	Same as above..........	$R_3=R_4=-C_2H_5$
R_1=H		$R_3=R_4=-C_2H_5$
R_1=H		$R_3=R_4=-C_2H_5$
R_1=H		$R_3=R_4=-C_2H_5$

wherein the chlorides of the corresponding acids are reacted with the appropriate amine in anhydrous benzene, or where:

R_1=H		$R_3=R_4=-C_2H_5$
R_1=H	Same as above..........	 R_3=H $R_4=-CH(CH_3)_2$
R_1=H		Same as above.

wherein the α-naphthoic acid ethyl ester and 1:2:3:4-tetraisoquinolyl-3-carboxylic acid ethyl ester are reacted with the appropriate amine in the absence of solvent.

3,704,323
INDANE DERIVATIVES

John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.
No Drawing. Continuation-in-part of application Ser. No. 566,729, Sept. 26, 1969. This application Dec. 23, 1969, Ser. No. 887,723
Int. Cl. C07c *87/64*
U.S. Cl. 260—576 **5 Claims**

2-methyl-2-phenylindanamines are described. The compounds possess central nervous system stimulant activity.

3,704,324
PROCESSES FOR THE PREPARATION OF DESA-ANDROSTANES, PREGNANES, AND UNSATURATED DERIVATIVES THEREOF

Milan Radoje Uskokovic, Upper Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
No Drawing. Application Oct. 20, 1965, Ser. No. 499,094, now Patent No. 3,574,761, which is a continuation-in-part of application Ser. No. 400,206, Sept. 29, 1964. Divided and this application June 17, 1968, Ser. No. 737,361
Int. Cl. C07c *49/00*
U.S. Cl. 260—586 H **12 Claims**

This invention is directed to processes for the preparation of desA-androstanes, pregnanes and unsaturated derivatives thereof by pyrolyzing the alkali metal salt of the corresponding 3,5-seco-3-oic acid. The intermediates prepared in accordance with the process of this invention enable the preparation of 9β,10α-steroids which are pharmacologically useful as anabolic, anti-androgenic, progestational and salt-retaining agents.

3,704,325
PROCESS FOR TRIS (HYDROXYMETHYL) PHOSPHINE BY USE OF HIGH BOILING SOLVENT

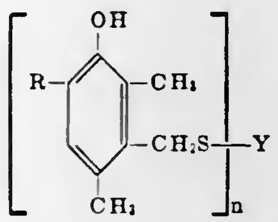
Richard Frederick Stockel and William Frank Herbes, Bridgewater Township, Somerset County, N.J., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Nov. 27, 1970, Ser. No. 93,404
Int. Cl. C07f *9/50*
U.S. Cl. 260—606.5 P **3 Claims**

Production of tris(hydroxymethyl)phosphine of high purity and relatively free of water. Phosphine is reacted with about three moles of formaldehyde in the presence of a high boiling organic solvent at elevated temperatures and pressures.

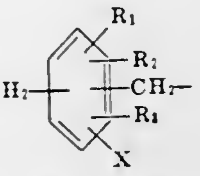
3,704,326
HYDROCARBON-BRIDGED THIOMETHYLENEPHENOL ANTIOXIDANTS

John Song, Bound Brook, N.J., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Jan. 22, 1970, Ser. No. 5,130
Int. Cl. C07c *149/36*
U.S. Cl. 260—609 F **12 Claims**

Hydrocarbon-bridged thiomethylenephenols are provided having the formula



in which R is a branched-chain alkyl of 3 to 12 carbon atoms, Y is a divalent or trivalent alkylene of 2 to about 20 carbon atoms or a mononuclear aromatic radical of the formula

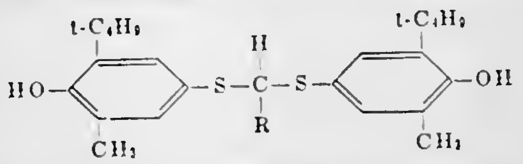


wherein R_1, R_2, and R_3 are hydrogen or alkyl of 1–3 carbon atoms and X is R_1 or $-CH_2-$, and n is 2 or 3. They are antioxidants for oxygen-sensitive organic materials, particularly polyolefins of 2–6 carbon atoms such as polypropylene plastics. They are prepared by condensing two or three moles of a 3-chloromethyl-2,4-dimethyl-6-branched chain alkylphenol with a hydrocarbon dithiol or trithiol or by condensing the corresponding 3-mercaptomethyl phenol with a hydrocarbon having two or three active chloromethyl groups.

3,704,327
ALKYLIDENEDITHIO-BISPHENOLS

Martin B. Neuworth, Trumbull, Conn., assignor to Continental Oil Company, Ponca City, Okla.
No Drawing. Continuation-in-part of application Ser. No. 835,811, June 23, 1969, which is a continuation-in-part of applications Ser. No. 637,622, Ser. No. 637,649, and Ser. No. 637,650, all May 11, 1967, all now abandoned. This application Dec. 10, 1971, Ser. No. 206,930
Int. Cl. C07c *149/18*
U.S. Cl. 260—609 F **2 Claims**

Alkylidenedithiobisphenols having the general formula:



where R is hydrogen or methyl. The compounds are useful as rubber antioxidants.

3,704,328
4- AND 5-ARYL-1-NAPHTHALENEETHANOL COMPOUNDS

James S. Kaltenbronn, 3555 Greenbrier Drive, Apt. 70C, Ann Arbor, Mich. 48105, and Franklin W. Short, 3431 Clover Drive, Saline, Mich. 48176
No Drawing. Continuation-in-part of application Ser. No. 573,871, Aug. 22, 1966. This application Jan. 21, 1970, Ser. No. 4,744
Int. Cl. C07c *31/14;* **A61k** *27/00*
U.S. Cl. 260—618 F **4 Claims**

4-phenyl- and 5-phenyl-1-naphthaleneethanols, optionally substituted by o- or m-halo or by β-methyl. The compounds have pharmacological activity and can be produced by (a) reducing a carboxylic acid, salt, or ester, (b) reacting a 1-naphthylmagnesium halide with ethylene oxide and hydrolyzing the product or (c) reacting a 1-naphthylmethylmagnesium halide with formaldehyde and hydrolyzing the product.

3,704,329
CATALYTIC HYDRATION OF OLEFINS TO ALCOHOLS

Ermbrecht Rindtorff, Recklinghausen, and Wilhelm Ester, Herne, Westfalen, Germany, assignors to Veba-Chemie Aktiengesellschaft
No Drawing. Continuation-in-part of application Ser. No. 174,396, Feb. 20, 1962. This application Sept. 27, 1966, Ser. No. 582,245
Claims priority, application Germany, Feb. 21, 1961, B 61,372, Patent 1,156,772
Int. Cl. C07c *29/04;* **B01j** *11/82*
U.S. Cl. 260—641 **5 Claims**

Catalytic hydration of olefins to alcohols at elevated temperatures and pressures with water in gaseous phase in the presence of a mineral catalyst prepared by impregnating a porous mineral alumina-silicate, e.g. bentonite, having an Al_2O_3 content below about 10% by weight with phosphoric acid.

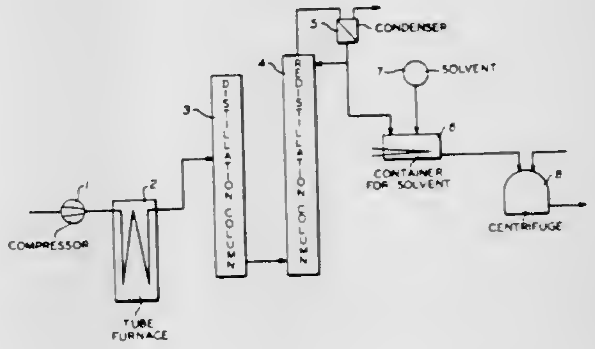
3,704,330
PROCESS FOR RECOVERY OF PARA-XYLENE FROM MIXTURES OF META AND PARA-XYLENE

Mohamed M. El-Mogazi, Hightstown, and Charanjit Rai, Somerset, N.J., assignors to Cities Service Oil Company, Tulsa, Okla.
No Drawing. Filed Nov. 26, 1968, Ser. No. 779,215
Int. Cl. C07c *7/14*
U.S. Cl. 260—674 A **5 Claims**

In the separation of para-xylene from mixtures consisting predominantly of meta- and para-xylene isomers by fractional crystallization, small amounts of organometallic eutectic inhibitors are dissolved in the xylene mixture to lower the eutectic point of the mixture and improve recovery of para-xylene therefrom. The amount of organometallic compound dissolved in the xylene mixture is between about 0.01 and about 4.0 mole percent and is preferably in the range between about 0.3 and about 1.0 mole percent.

3,704,331
PROCESS FOR THE PRODUCTION OF ANTHRACENE

Herbert Buffleb, Castrop-Rauxel, and Heinz-Gerhard Franck, Duisburg-Meiderich, Germany, and Johannes Turowski, deceased, late of Castrop-Rauxel, Germany, by Else Paula Maria Turowski, nee Hinz, heir, Castrop-Rauxel, Gerd Collin, Duisburg-Meiderich, and Maximilian Zander, Castrop-Rauxel, Germany, assignors to Rutgerswerke Aktiengesellschaft, Frankfurt am Main, Germany
Filed Dec. 15, 1970, Ser. No. 98,426
Claims priority, application Germany, Jan. 7, 1970, P 20 00 351.4
Int. Cl. C07c *15/28, 15/30*
U.S. Cl. 260—675 **5 Claims**



Oils rich in aromatic substances or residues from the pyrolysis of gasoline or similar hydrocarbon mixtures are used for the production of anthracene through enrichment by distillation and recrystallization from an arylalkyl-ketone, preferably acetophenone.

3,704,332
PYROLYSIS OF HYDROCARBONS

Olle B. Lindstrom, Lorensviksvagen 14, Taby, Sweden
No Drawing. Filed Nov. 6, 1970, Ser. No. 87,614
Claims priority, application Sweden, Nov. 7, 1969, 15,354/69
Int. Cl. C07c *3/00*
U.S. Cl. 260—679 R **3 Claims**

A process for the production of acetylene and ethylene by pyrolysis of liquid hydrocarbons heated in a flame with improved yields being obtained through the use of a knallgas flame and the introduction of the hydrocarbons in a finely divided or droplet form.

3,704,333
THERMAL DECOMPOSITION OF ORGANIC COMPOUNDS

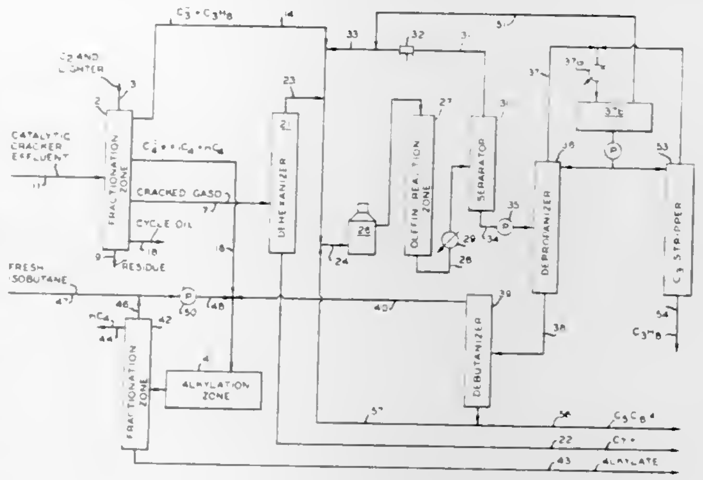
Carl D. Spangler, Jr., Frederick J. Radd, and Louis H. Wolfe, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.
No Drawing. Filed Aug. 20, 1970, Ser. No. 65,665
Int. Cl. C07c *5/22*
U.S. Cl. 260—683 **6 Claims**

The present invention relates to an improved process for thermally decomposing organic compounds in contact with alloy steel, e.g., the cracking of low molecular weight hydrocarbons in heat-resistant alloy steel furnace tubes to produce olefins or acetylenes. By the present invention, heat-resistant alloy steel comprised of at least 1% by weight silicon is employed, and a carburization-resistant protective film comprised of silicon oxidation compounds is formed thereon. The protective film is formed by pretreatment of the alloy with steam prior to thermally decomposing the organic compound therein and/or by combining a small amount of steam with the organic compound so that the protective film is formed during the thermal decomposition.

3,704,334
HYDROCARBON CONVERSION

Rolland E. Dixon and Fred E. Sherk, Bartlesville, Okla., assignors to Phillips Petroleum Company
Continuation-in-part of application Ser. No. 683,354, Nov. 15, 1967. This application Mar. 2, 1970, Ser. No. 15,347
Int. Cl. C07c *3/00, 3/50*
U.S. Cl. 260—683.43 **6 Claims**

Pentene and/or hexene are converted by the olefin reaction to produce butene. In one embodiment C_5 and/or C_6 olefins are separated from a gasoline stream, converted according to the olefin reaction, and lighter olefins produced thereby are alkylated, thereby removing from the gasoline components which are objectionable from the standpoint of motor vehicle hydrocarbon emissions and producing high octane lower volatility components which reduce or eliminate the need for lead-containing antiknock additive and reduce olefinic hydrocarbon emission due to vaporization loss.



ERRATA

For Classes 423—128 thru 423—242 see:
Patents Nos. 3,704,091 thru 3,704,095

ERRATUM

For Class 423—342 see:
Patent No. 3,704,104

3,704,335
METHOD FOR PROMOTING THE GROWTH OF LIVESTOCK

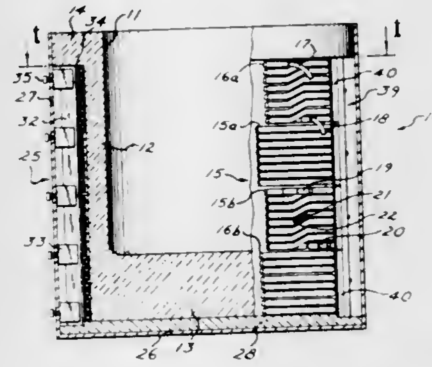
Yutaka Kodama and Akira Takai, Toyama-shi, and Tatsumi Inagaki, Tokyo, Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan
No Drawing. Filed July 25, 1969, Ser. No. 845,053
Int. Cl. A61k *27/00*
U.S. Cl. 424—249 **4 Claims**

3-di(hydroxymethyl)amino - 6-(5-nitro - 2-furylethenyl)-1,2,4-triazine is very effective for promoting the growth of livestock (for example, poultry, ducks, turkeys, swine, horses, cattle and goats) when given to the livestock in combination with carriers such as feeds and inert minerals.

ELECTRICAL

3,704,336
SUPPORT MEANS FOR INDUCTION COIL

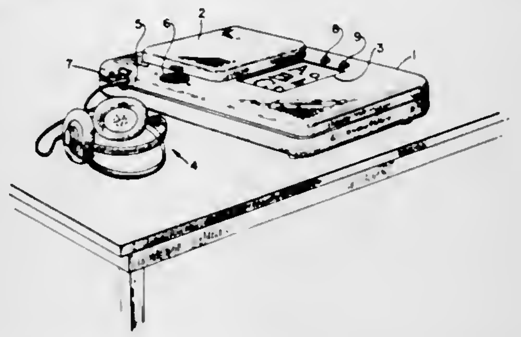
Don A. Synnestvedt, Warren, Ohio, assignor to Ajax Magnethermic Corporation, Warren, Ohio
Filed April 1, 1971, Ser. No. 130,240
Int. Cl. F27d *11/06;* **H05b** *5/16*
U.S. Cl. 13—27 **13 Claims**



There is disclosed herein longitudinal outer coil support means for a multisection induction coil, the coil comprising both cooling and power coil sections each including a number of coil turns. The coil turns carry fastening devices at spaced portions of the periphery, the fastening means being aligned longitudinally of the multisection induction coil and projecting through longitudinally aligned, insulating sections. The outer edges of each longitudinally aligned group of insulating sections are disposed in a channel member.

3,704,337
TACTILE RESPONSE TEACHING SYSTEM

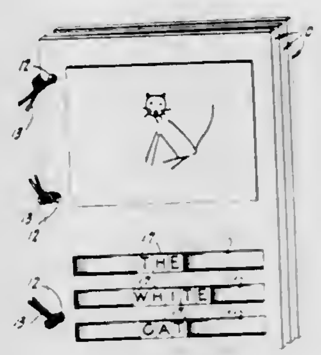
John C. Sims, Jr., Sudbury, and Lloyd D. Brace, Jr., Concord, both of Mass., assignors to Information Transfer Corporation, Wellesley, Mass.
Filed April 7, 1969, Ser. No. 813,930
Int. Cl. G09b *7/04*
U.S. Cl. 35—9 R **15 Claims**



A teaching system for supplying visual and audible teaching information to a student in a teaching sequence determined by the tactile response of the student to the audible information, comprising a machine actuable to sequentially feed a sequence of cards from a supply station to a viewing station and then back to the supply station. The cards bear printed visible choice fields on one side, and, on the opposite side, printed circuits and recorded audible sound tracks. There is a platen on the machine adapted to cooperate with printed circuits on a card in viewing position. Interposed between the card and the platen is a compressible mask operable by a student's finger touching a choice point on the choice field to deform and permit a connection between a selected choice point on the card and the platen. There is programmable apparatus in the machine for reproducing audible tracks on a card in viewing position in a sequence determined by a program established by the printed circuits on the card in position.

3,704,338
BOOK FOR TEACHING READING

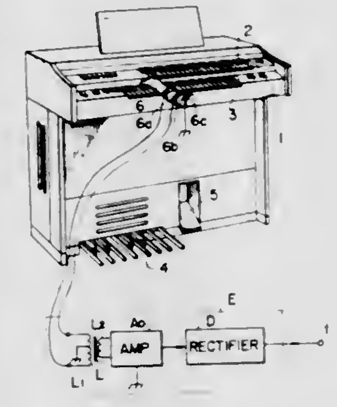
Robert Eugene Shore, Box 296, Kentfield, Calif.
Filed Nov. 13, 1970, Ser. No. 89,194
Int. Cl. G09b *17/00*
U.S. Cl. 35—35 E **1 Claim**



An educational device and method for the individualized teaching of reading employing a series of page panels each including elongated word-well slots. Pieces depicting letters are placed into the slots to form words and sentences corresponding to a learner's own speech and mental image of the story idea. The learner illustrates his talk placed in the slots by drawing on a disposable sheet mounted onto each panel. When the child expresses a sequence of mental images, one per panel, the panels are inked to form a book depicting an original story. The child then masters his own speech forms (talk) at the reading level. In learning to read his own speech he can more easily read what others have written.

3,704,339
MUSCULAR VOLTAGE-CONTROLLED TONE-MODIFYING DEVICE

Naoyuki Niinomi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan
Filed Feb. 17, 1971, Ser. No. 115,981
Claims priority, application Japan, Feb. 18, 1970, 45/14049; Feb. 23, 1970, 45/17670; Feb. 23, 1970, 45/17671; Feb. 26, 1970, 45/19120; Feb. 26, 1970, 45/19121; May 16, 1970, 45/47923; May 16, 1970, 45/47924; May 16, 1970, 45/47925; May 16, 1970, 45/47926; May 22, 1970, 45/50227; May 22, 1970, 45/50228
Int. Cl. G10h *1/02*
U.S. Cl. 84—1.24 **28 Claims**



An electronic musical instrument is controlled also by the muscular voltage of the instrument player. A pair of electrodes are mounted on any selected portion of the skin of the player in order to pick up a muscular voltage appearing across a muscle upon a contraction thereof. The picked-up voltage is amplified and processed into a control signal which in turn controls the tone signal modifying circuit in the instrument. While the player is engaged in the ordinary performance using hands and feet, further effect control can be carried out at the player's will.

3,704,340
RHYTHM TRAPS

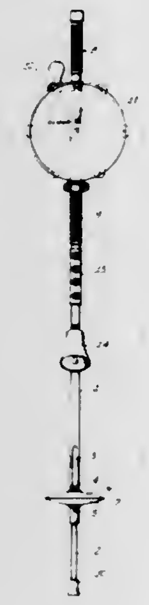
Jack G. Hall, 15 Mississaga Street East, Orillia, Ontario, Canada

Filed March 27, 1972, Ser. No. 238,546

Claims priority, application Canada, Nov. 30, 1971, 128,957

Int. Cl. G10d *15/00*

U.S. Cl. 84—170 **10 Claims**



A rhythm device comprising two resiliently interconnected shafts capable of relative movement between two positions. Noise-making means such as cymbals are mounted on each shaft such that sound is produced at one of the two aforesaid positions.

3,704,341
COLOR VIDEO SIGNAL RECORDING AND REPRODUCING SYSTEM

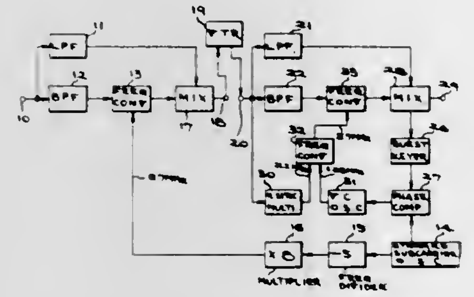
Mitsuo Fujita, Tokyo, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Feb. 18, 1970, Ser. No. 12,249

Claims priority, application Japan, Feb. 21, 1969, 44/12553

Int. Cl. H04n *9/02, 1/28*

U.S. Cl. 178—5.2 R **2 Claims**



A color video signal recording and reproducing system frequency converts a carrier chroma signal of a color television video signal to lower its frequency band to a recordable level. This signal is then mixed with a luminance signal of a limited frequency band to produce a combined signal which is supplied to a monochrome video tape recorder for recording on a magnetic tape. The frequency and phase of a color burst signal of a carrier chroma signal has a variation in the timing axis. An automatic phase control circuit takes this burst signal out of a video signal reproduced from the magnetic tape. The phase control circuit comprises a feedback loop including a voltage control oscillator, color burst keyer, phase comparator, and at least one frequency convertor. The feedback loop signal is made to agree with the output of a reference subcarrier generator. The carrier chroma signal is frequency converted and combined with a luminance signal taken out from the reproduced signal to provide a color video signal. This color signal includes a carrier chroma signal, from which the variation in the timing axis has been removed, and a luminance signal having a limited frequency band.

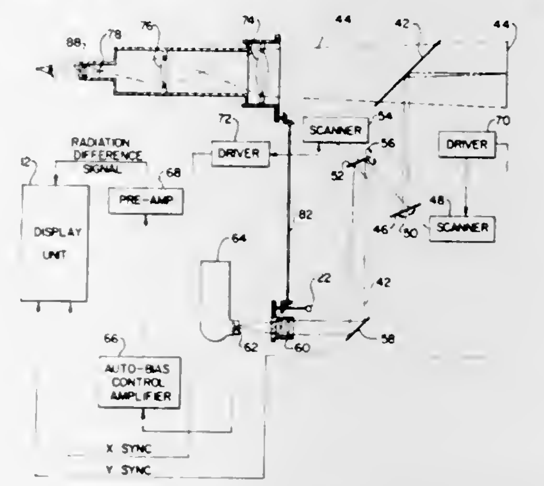
3,704,342
INFRARED SCANNING SYSTEM

James Fred Stoddard, Westwood, Mass.; Francis A. Orabona, Warwick, R.I., and Rodolphe A. Dorval, Dracut, Mass., assignors to Dynarad, Inc., Norwood, Mass.

Filed Jan. 22, 1970, Ser. No. 4,856

Int. Cl. H04n *7/00*

U.S. Cl. 178—6.8 **14 Claims**



An infrared scanning system capable of providing high sensitivity thermal detection and rapid scanning of a field of view by means of small optics and low inertia oscillatory scanners. Visual coaxial viewing of the scanned field is provided and common focusing of the visual and infrared channels permit rapid and simple focus control. The system includes a flicker-free visual display operative in an intensity mode to present a full gray scale radiometric picture, and in an isotherm mode to present intensified presentations of selected temperature ranges.

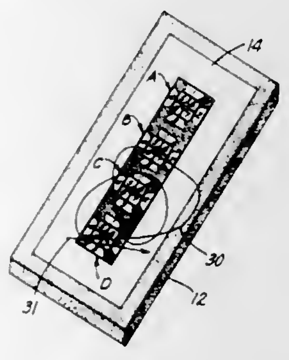
3,704,343
CHARACTER GENERATOR

Lawrence K. Howard, 14812 Addison Street, Sherman Oaks, Calif.

Filed Oct. 5, 1971, Ser. No. 186,697

Int. Cl. G08c *21/00*

U.S. Cl. 178—30 **11 Claims**



A manually operated device for generating alphanumeric character information for an output device such as a printer or a display or a transmission line. An insulating plate with one or more character units, each comprising inner and outer sets of four contact segments, with the operator moving a stylus or finger over the plate and segments to selectively actuate control circuits for the output device. An eight bar character including four bars forming a rectangle and four bars radiating from the center to the corners of the rectangle.

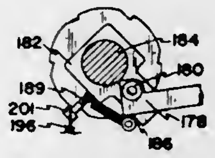
3,704,344
VEHICLE DATA RECORDER

Reed A. Newmeyer, 4521 West Claremont Street, Glendale, Ariz.

Filed July 11, 1969, Ser. No. 841,033

Int. Cl. G01p *13/00*

U.S. Cl. 346—40 **3 Claims**



Vehicle data recorder system including method and apparatus which, without constant attention of the operator, makes a printed recording of the velocity, direction of travel of each vehicle actuating the recorder and the time of day each vehicle actuates the recorder. One preferred embodiment has concentric printing platens which move relative to one another and relative to a printing zone so that the current time of day and the velocity of the actuating vehicle are simultaneously disposed within the printing zone. A clock mechanism determines the position of the time of day platen so that the correct time of day is in the printing zone. Spaced vehicle sensors serially sense a moving vehicle and generate an electrical signal which causes the velocity printing platen to move until the vehicle velocity is within the printing zone. A predetermined sequence of activation of the sensors causes the direction of travel of be printed. A total vehicle count is accumulated on a tabular readout. Another presently preferred embodiment converts the vehicle speed and time of day into encoded pulses which actuate a punch or printer to encode punch tape or print out with the data described above.

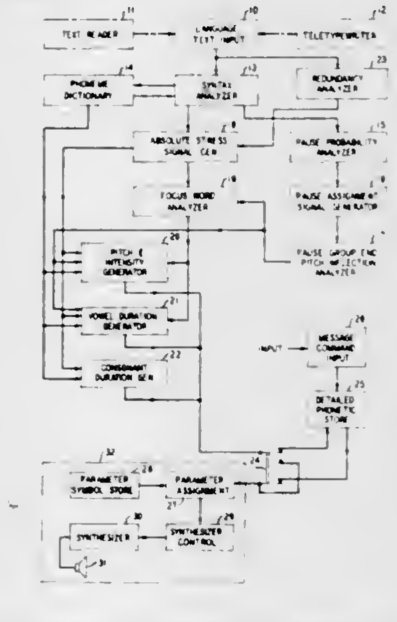
3,704,345
CONVERSION OF PRINTED TEXT INTO SYNTHETIC SPEECH

Cecil Howard Coker, Chatham Township, Morris County, and Noriko Umeda, Summit, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed March 19, 1971, Ser. No. 126,200

Int. Cl. G10l *1/10*

U.S. Cl. 179—1 SA **9 Claims**



A system is disclosed for converting printed text into speech sounds. Text is converted to alpha-numeric signal data, for example, by a scanner and dictionary lookup. Syntax of the input information is then analyzed to determine the proper phrase category, e.g., subject, verb, object, etc., of word intervals, and to assign pause, stress, duration, pitch and intensity values to the words. From these data a phonetic description of each word is found in a stored dictionary, modified by the accumulated data, and used to prepare synthesizer control signals.

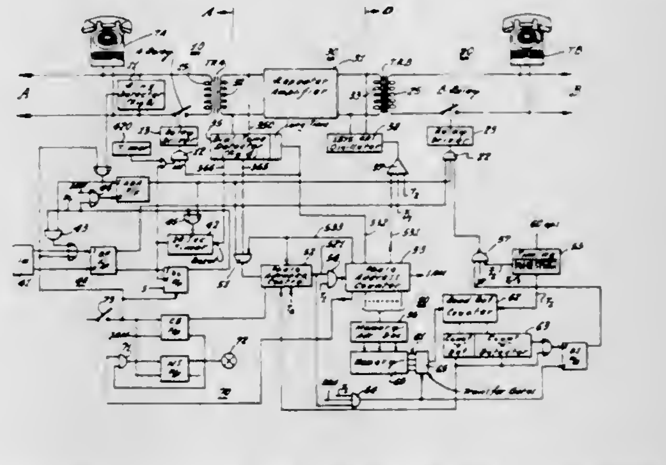
3,704,346
TELEPHONE SWITCHING AND FORWARDING SYSTEM

Lloyd M. Smith, Canoga Park; James B. Scott, Tarzana, and William H. Wertz, Newberry Park, all of Calif., assignors to Commatic Systems, Chatsworth, Calif.

Filed Jan. 28, 1970, Ser. No. 6,487

Int. Cl. H04m *3/54*

U.S. Cl. 179—18 BE **36 Claims**



Described herein is a call diversion system for receiving a telephone call, dialing out a different number through a second line and linking the two lines. When identification is needed, an identification code is likewise transmitted subsequent to dial-out. A conversation monitor detects absence of communication to permit a timer to run for testing whether temporary interruption of a line evokes dial tone to reset the system. The number to be dialed out can be reprogrammed locally or remotely by sending signals into the system. The number to be dialed out is held in a memory having, for example, individually addressable locations. Automatic dial-out proceeds by a counting process for accurately timing dial pulses and pauses. During operation memory address sequences alternate with dial tone search phases. A subscriber can initiate an immediate dial-out from a remote location. The system diverts calls immediately in the operate mode but defers diversion in the standby mode, giving the user opportunity to answer the phone directly.

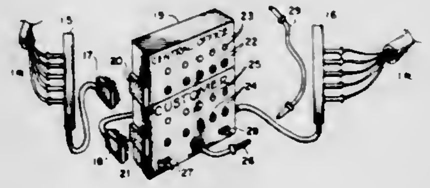
3,704,347
TELEPHONE CABLE RESTORER SYSTEM

Robert Warren Brown, Whittier, Calif., assignor to General Telephone Company of California

Filed June 28, 1971, Ser. No. 157,279

Int. Cl. H04m *3/22*

U.S. Cl. 179—91 R **2 Claims**



A method and portable panel structure for carrying out the method serve to restore rapidly telephone service to customers after a telephone cable connecting the customers' lines to a central office has been inadvertently severed. Arbitrary connections from the severed portion of the cable extending from the central office are made to central office jacks in the panel and arbitrary connections from the severed cable portion extending from the customer's premises are connected to customer jacks on the panel. A tester's plug or answer cord together with a voltage source, ringing generator, and test unit are provided in the panel and enable a tester to identify a customer's telephone number and patch the same with one of several patch cords to the proper central office jack thereby immediately restoring service.

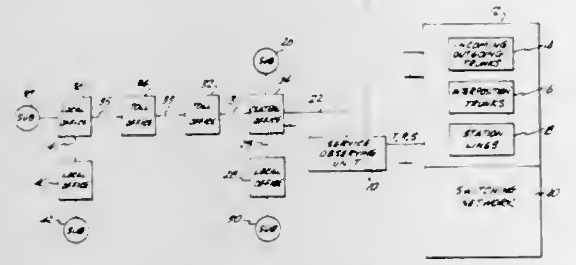
3,704,348
SERVICE OBSERVING SYSTEM

Alexander Charles McIntosh, Oak Harbor, and Maurice Irvin Smith, Kirkland, both of Wash., assignors to Tel-Tone Corporation, Kirkland, Wash.

Filed Nov. 6, 1970, Ser. No. 87,464

Int. Cl. H04m *3/22*

U.S. Cl. 179—175.2 C **16 Claims**



To allow an observer at any remote subset on a telephone network to observe the quality of service provided to customers in a local area thereof, a service observing unit is connected to each line and trunk to be observed at the local area and to an incoming trunk from an adjacent central office. When the remote observer dials a connector number at the central office assigned to the service observing unit, an observer line connector connects the unit to the remote observer and transmits an identity tone thereto. The remote observer must then dial a security access code comprising a plurality of multi-frequency signals with established inter-signal spacing in a given sequence within a predetermined time period, or a timing and disconnect circuit within the unit releases the connection established by the observer line connector. If a correct code has been dialed, an inhibit signal is provided to the timing and disconnect circuit and an idle tone is transmitted to the remote observer. A plurality of selectors and connectors, one for each trunk or line to be observed, are then enabled by a reset signal. The first of these observed trunks or lines to have a calling signal thereon is detected by its corresponding selector which then supplies an inhibit signal to the remaining selectors and connects its line or trunk through its connector to an amplifier, and a hybrid bridging network to the remote observer. To select another line or trunk, the observer dials the last multi-frequency signal of the security access code so that a reset signal is supplied to all the selectors. To disconnect, the remote observer may place his subset on-hook or dial a disconnect multi-frequency signal. A solid-state embodiment of the unit is also discussed, as is a modification allowing selective access by the remote observer to a plurality of trunk or line groups.

3,704,349
MAGNETIC RECORDING SYSTEM

Takeshi Goshima, and Yutaka Kohtani, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

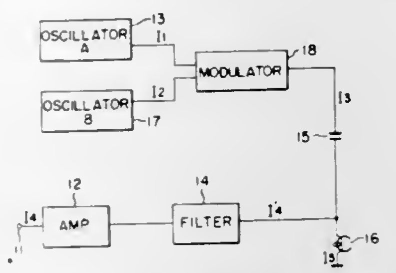
Filed Jan. 18, 1971, Ser. No. 106,979

Claims priority, application Japan, Jan. 21, 1970, 45/5891

Int. Cl. G11b *5/02*

U.S. Cl. 179—100.2 R **6 Claims**

An improved magnetic recording system is provided which uses an amplitude-modulated high frequency bias. A first high frequency bias or carrier is amplitude-modulated by a second bias component or modulating wave having a frequency higher than the highest frequency of the input signal but lower than that of the first bias component, and the amplitude-modulated high frequency bias is superposed upon the input signal. The deterioration of the input signal, especially its high frequency component by the prior art unmodulated high frequency bias may be eliminated so that the flat reproduction characteristic may be obtained over the wide range of the input signal. In addition, the improved system requires only the minimum number of component parts.



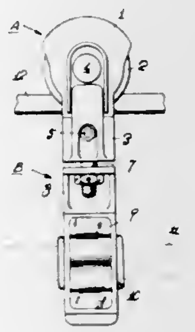
3,704,350
CORD HANGERS FOR HOIST

Akira Itoh, 7, 3-chome, Higashino-cho, Kohama, Sumiyoshi-ku, Osaka, Japan

Filed Sept. 23, 1970, Ser. No. 74,553

Int. Cl. H02g *7/06*

U.S. Cl. 191—12 R **12 Claims**



A mobile carrier apparatus for detachably supporting from an elongated supporting cable or rod a flexible element of extensible character such as an insulated electric power cord or a fluid conduit connectable with a work member serviced by said flexible element. The carrier is made up of a composite element-hanger having detachably connected upper and lower brackets, each having a freely rotatable roller or pulley wheel disposed above and below the supporting cable. From the lower bracket there depends in swivel like fashion a further composite cord-gripping support made from a pair of separable complementally shaped segments which can be adjustably closed relative to one another to grip cords of varying cross-sectional size therebetween. The mobile carriers of this type are usually used in plural form to pay out the supported flexible cord or element as needed in use, said cord usually being formed in coiled loops when returned after use with a mobile carrier of this type supporting each of the loops.

3,704,351
TIMER WITH SANDWICHED INTERNAL ESCAPEMENT MECHANISM DISPOSED BETWEEN TWO PROGRAMMING MEANS

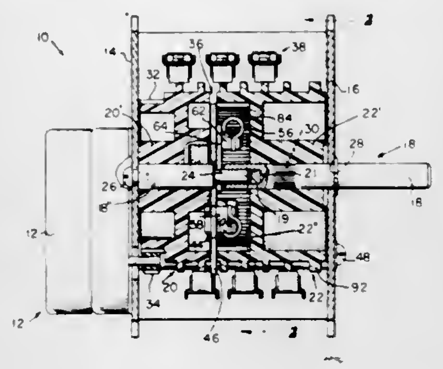
Wallace L. Linn, and Elmo W. Voland, both of Indianapolis, Ind., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Continuation of Ser. No. 821,833, May 5, 1969, abandoned. This application May 28, 1971, Ser. No. 148,224

Int. Cl. H01h *7/10, 43/10*

U.S. Cl. 200—38 R **14 Claims**

A timer has first and second cam programming means rotatably driven about a common axis at different speeds with one of the cam programming means being driven in response to the rotation of the other cam programming means, the two cam programming means being coupled together by an escapement means sandwiched between the two cam programming means.



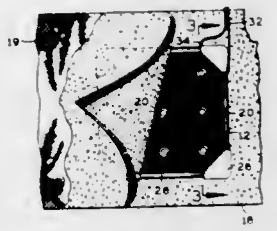
3,704,352
COMPOSITE SEAT AND SWITCH

John G. Fontaine, 2817 N.E. 26th Court, Fort Lauderdale, Fla.

Filed Nov. 17, 1971, Ser. No. 199,518

Int. Cl. H01h *3/14*

U.S. Cl. 200—85 R **10 Claims**



A composite seat and switch incorporating elements of a seat of an automotive vehicle and including sheets having electrical contacts which make and break through openings in a resilient, compressible, insulating separator, the sheets and separator cooperating with a seat padding layer, springs and a seat cover.

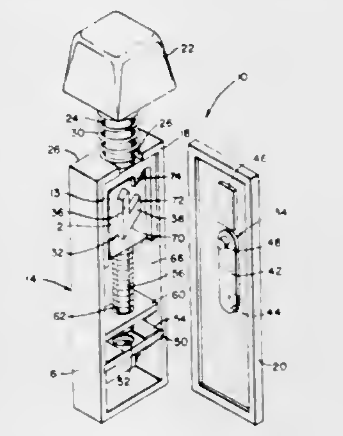
3,704,353
ALTERNATE ACTION MECHANISM WITH MAGNETIC LATCH CAM FOLLOWER BIASING MEANS

Richard C. Halla, Chicago, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Sept. 16, 1970, Ser. No. 72,736

Int. Cl. H01h *13/56*

U.S. Cl. 200—153 J **1 Claim**



A bistable mechanical device, such as a push-to-make/push-to-break switch has a cam which is arranged for manual reciprocation within a housing between start stroke and end stroke positions. A spring urges return of the cam to the latter position. A rockable follower is carried from the housing and is urged toward a beginning aspect by a permanent magnet which is secured from the housing. The follower is rocked by the cam during a first push and moves: (1) toward cam latching condition under influence of the permanent magnet, as the cam moves from its end stroke position toward its start stroke position following the first push to fix the cam parts in a first or latched relative position; and (2) out of said latching condition under influence of the permanent magnet during a subsequent push, as the cam moves from latched position to end stroke position.

3,704,354
ARC IGNITER CIRCUIT CLOSING DEVICE AND METHODS OF OPERATION THEREOF

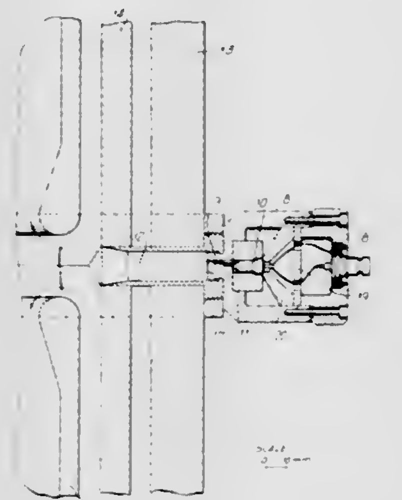
Guy Jean Theodore Lagofun, Tarbes, France, assignor to Etat Francais represente par Le Ministre Charge de La Defense Nationale Delegation Ministerielle pour L'Armement

Filed April 7, 1971, Ser. No. 131,929

Claims priority, application France, April 13, 1970, 7013195

Int. Cl. H01h *33/59*

U.S. Cl. 200—144 R **12 Claims**



An arc is struck across a gap between opposed contacts of a circuit maker by detonation of an explosive to produce a rapid flow of ionized gas and guiding the gas flow to the gap.

3,704,355
HANGING TYPE SWITCH CONSTRUCTION

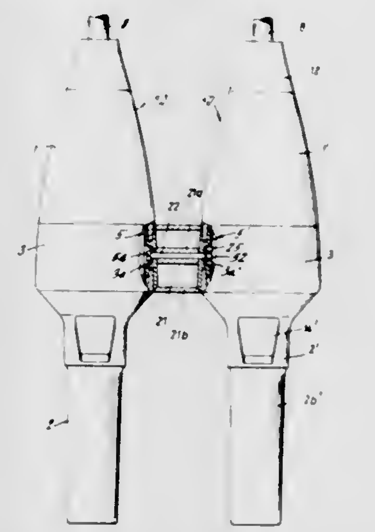
Uwe Lichtenvort, Essen; Johannes Kluge, Wetter, and Meinolf Schleyer, Unna, all of Germany, assignors to Demag AG

Filed May 13, 1971, Ser. No. 142,931

Claims priority, application Germany, May 16, 1970, P 20 24 109.2

Int. Cl. H01h *9/06*

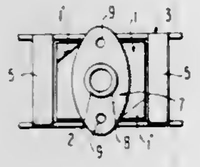
U.S. Cl. 200—157 **13 Claims**



A hanging-type switch construction includes an insert carrier which is adapted to carry all of the switching elements and which is adapted to be secured to a bottom portion of a housing which is adapted to carry the push button switch actuating mechanism. The push button mechanism includes a pivotal lever which becomes engaged with the switching lever mechanism of the switching elements. The bottom part also forms a handle. The housing includes an intermediate or central part which is interengaged with the bottom part and which includes a pivotal support which engages around a journal portion of the insert carrier for the switching elements. The top part of the housing also interengages with the central part and it includes an inlet at its top for the connecting cable and it also carries means for clamping this top part to the insert carrier. By making the central part of a plastically deformable material it is possible for the upper part to twist relative to the lower part without destruction of the housing and it is also possible to interconnect several housings by connecting their elastically dependable central parts together.

3,704,356
DEVICE FOR FIXING A SWITCH UNIT IN A KEYBOARD SWITCH

Makoto Yanaga, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan
Filed Jan. 25, 1972, Ser. No. 220,666
Claims priority, application Japan, Jan. 25, 1971, 46/2734
Int. Cl. H01h *9/08*
U.S. Cl. 200—168 C **2 Claims**

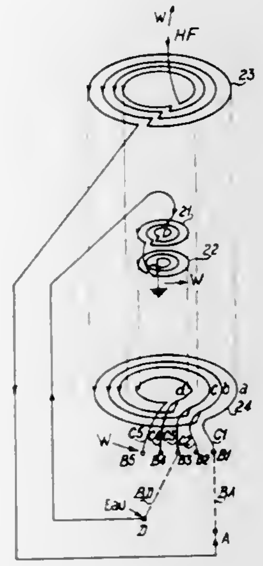


A device for fixing a switch unit into a keyboard switch. The switch unit is rectangular and has at least one stopper projected at one upper corner thereof, a knob engaging portion formed at the upper center thereof, and a pair of projections formed at opposite side surfaces thereof. A keyboard plate formed in a U shape has a plurality of bridge portions and a pair of cutouts for engaging the projections of the switch unit to fix the switch unit therein. A keep leaf spring having a center hole for turnably engaging the knob engaging portion of the switch unit is held under the bridge portions of the keyboard plate at opposite ends thereof when turned in longitudinal direction of the keyboard plate and is used to hold the switch unit into the keyboard switch.

3,704,357
INDUCTOR ARRANGEMENT FOR INDUCTION HEATING APPLICATION PARTICULARLY FOR BRAZING PRESSES

Jean Moulin, Massy, France, assignor to Societe De Traitements Electrolytiques Et Electrothermiques (Stel)
Filed Dec. 29, 1971, Ser. No. 213,295
Claims priority, application France, Jan. 8, 1971, 7100521
Int. Cl. H05b *9/02*
U.S. Cl. 219—10.79 **8 Claims**

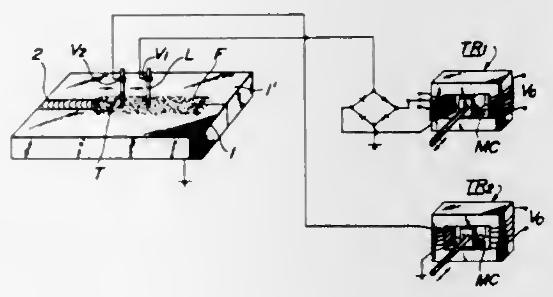
An inductor arrangement for induction heating of one or more flat circular plates of different diameters including a first set of windings always active during operation of the brazing press and a second set of windings selectively inserted in series with the first set. The first set comprises a central portion including on or more small diameter pancake coils covering the center of the plate to be heated and a peripheral portion made up of a flat annular spiral surrounding the central portion and



further away from this plate than the latter. The second set comprises a flat annular spiral each of whose turns is tapped so as to insert that one or pair of turns which faces the peripheral zone of the plate to be heated in series with the first set.

3,704,358
SUBMERGED-ARC BOTH-SIDE BUTT WELDING METHOD OF A SQUARE GROOVE

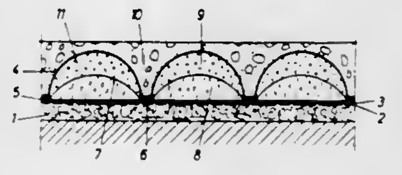
Tatsuo Saito, Kobe; Kozo Akahide, and Teruo Ukebe, both of Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Fukiai-ku, Kobe, Japan
Filed Nov. 23, 1971, Ser. No. 201,340
Claims priority, application Japan, Dec. 14, 1970, 45/110804
Int. Cl. B23k *9/18*
U.S. Cl. 219—73 **8 Claims**



A method for submerged-arc welding of a square butt joint from opposite surfaces thereof, by using tandem electrodes. The tandem electrodes are moved at 50 to 120 cm/min, relative to the joint, while passing a current I_1 of 1,000 to 2,000 amperes through the leading electrode, while keeping the trailing electrode current I_2 to one-fourth to four-fifths of I_1 and the arc voltage of the leading electrode at $(I_1/40)+15$ to $(I_1/40)+35$ volts. The welding operations from the opposite surfaces are conducted under similar conditions.

3,704,359
STORAGE PANELS, PARTICULARLY FOR HEATED FLOORS

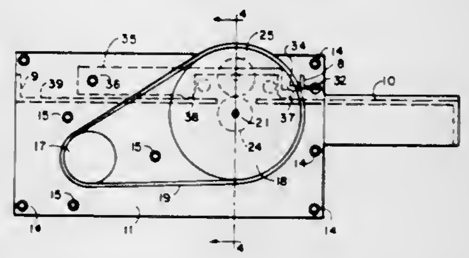
Nikolaus Laing, 7141 Aldingin-bei, Hofener Weg, Germany
Filed Oct. 28, 1970, Ser. No. 84,733
Claims priority, application Austria, Nov. 4, 1969, A 10333/69
Int. Cl. H05b *1/00*
U.S. Cl. 219—213 **21 Claims**



A heat storage panel consisting of a container, preferably of plastics material, and filled with a storage mass which gives off its heat of crystallization at a predetermined temperature.

3,704,360
CARD READER

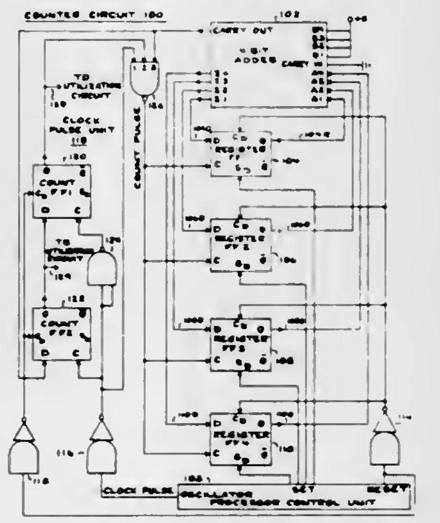
Bruce R. McFadden, 92 Ardmore Street, Framingham, Mass.
Filed April 15, 1970, Ser. No. 28,759
Int. Cl. H04m *17/02;* **G06k** *7/015;* **B65h** *5/22*
U.S. Cl. 235—61.11 R **8 Claims**



Information recorded along a line on a card is detected by driving the card past a detector adjacent the line when the card is inserted into a slot, the drive mechanism then reversing after the information is detected so that the card is expelled from the same slot.

3,704,361
BINARY SYNCHRONOUS UP/DOWN COUNTER

Albert D. Patterson, Galion, Ohio, assignor to North Electric Company, Galion, Ohio
Filed April 30, 1971, Ser. No. 138,973
Int. Cl. H03k *21/06*
U.S. Cl. 235—92 CP **21 Claims**

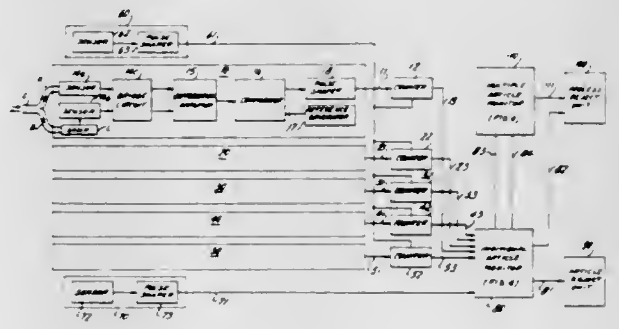


A binary counter consisting of a binary adder and flip-flops, the Q outputs of the flip-flops being connected to the A inputs of the adder, the Σ outputs of the adder being connected to the D inputs of the flip-flops. By connecting the B input of the adder to any of several combination of source voltages, the counter may be used as a down counter or an up counter wherein the sequence of steps up or down is selectively variable.

A count pulse may be provided for pulsing in the new count to the flip-flops. In addition, a set signal may be provided to load the flip-flops and a reset signal may be provided to clear the flip-flops.

3,704,362
QUALITY CONTROL SYSTEM

Mark J. Kolby, Maywood, and Henry T. Goldbach, Little Ferry, both of N.J., assignors to Bio-Medical Sciences, Inc., Fairfield, N.J.
Filed June 3, 1971, Ser. No. 149,618
Int. Cl. G06f *15/46*
U.S. Cl. 235—151.13 **11 Claims**

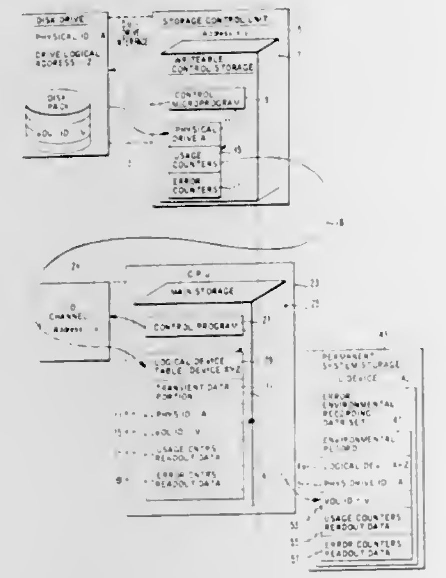


A system for providing indication of both the quality of individual manufactured articles and the quality of the process for manufacturing the same. Circuit means are included for sensing article characteristics and making determinations (1) whether each article exhibits all requisite characteristics, (2) whether each article has fewer than a predetermined number of requisite characteristics, and (3) whether each article is a predetermined succession exhibits less than the requisite number of characteristics. Circuit means are provided for indicating the determinations made and for conveying indications of determinations (1) to article control apparatus and indications of determinations (2) and (3) to process control apparatus.

3,704,363
STATISTICAL AND ENVIRONMENTAL DATA LOGGING SYSTEM FOR DATA PROCESSING STORAGE SUBSYSTEM

Oscar E. Salmassy, and Robert E. Sullivan, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 9, 1971, Ser. No. 151,503
Int. Cl. G06f *11/00*
U.S. Cl. 235—153 **3 Claims**

A method and apparatus for maintaining a statistical data record of usage and error information for each physical device and for physical storage volumes within each physical device, in a data storage subsystem. Usage information provides an accumulated count of the total number of various types of usage, while error information provides an accumulated count of the total number of various types of errors encountered during the usage. All such information is identified by physical device and is further identified by physical ID of a storage volume mounted on the device. The usage/error information is off-loaded to a storage area of the using system each time one of the usage or error counts reaches a predetermined threshold, and can be off-loaded at end-of-day, or at a physical volume change time in order to allow a summary by time period and by storage volume ID. An environmental data logging mode is initiated when an intolerable amount of errors of a given type is encountered, and for the next predetermined number of times that the particular type of error which initiated logging occurs, detailed sense information is recorded by the subsystem and transmitted to the system. Statistical and environmental data is summarized for use by system maintenance personnel for diagnostic and maintenance purposes.



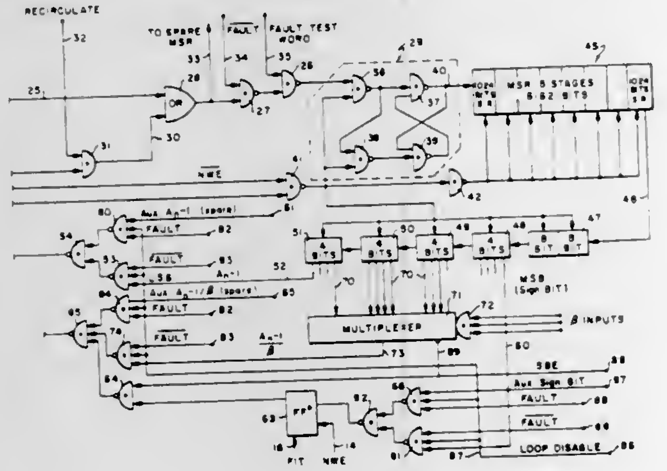
3,704,364
DIGITAL MEMORY SHIFT REGISTER INCORPORATING TARGET DATA AVERAGING THROUGH A DIGITAL SMOOTHING LOOP

Eugene R. Roeschlein; Donald C. Weiss, and David L. Zeph, all of Indianapolis, Ind., assignors to The United States of America as represented by the Secretary of the Navy

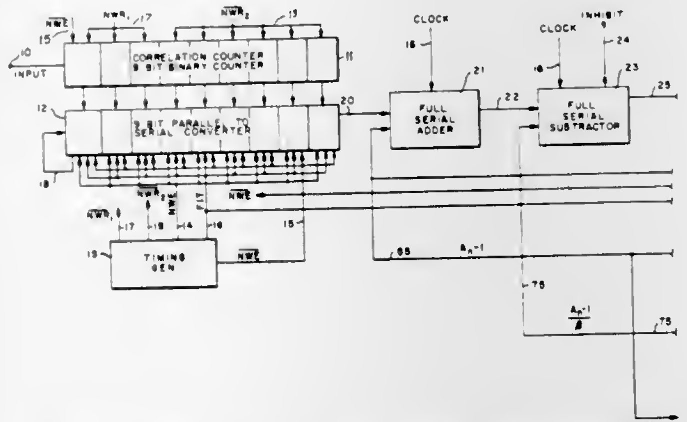
Filed Nov. 10, 1970, Ser. No. 88,432

Int. Cl. G06f *7/50*

U.S. Cl. 235—176 **6 Claims**



A digital memory shift register subsystem having a series of eight 1,024 bit shift register modules coupled together to create serial storage of 512 16-bit digital words of target information through a full adder and a full subtractor, a part of the digital memorized target information being taken as an output from the memory shift register prior to its end bit and conducted to a supplemental shift register and multiplexer combination circuit to add in and subtract from the target information digital information in the memory shift register by this recirculation to provide outputs to a display and other circuits of a sonar receiver.



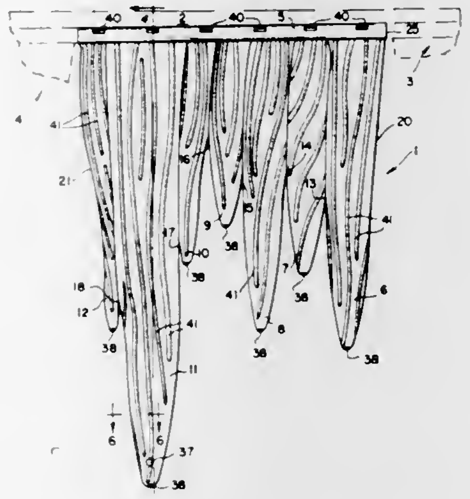
3,704,365
ARTIFICIAL LIGHTED ICICLE

Earl A. Miller, P.O. Box 396, Orem, Utah

Filed Jan. 25, 1971, Ser. No. 109,141

Int. Cl. F21v *3/02*

U.S. Cl. 240—10 R **11 Claims**



The artificial icicle device has a plurality of hollow icicles depending from a base that is to be secured to the eaves of a building, with the icicles being aligned and interconnected to form a chamber into which one or more electric lights extend for lighting the interior of the translucent icicles. Cooling air flows through holes in the bottom-most tips of the icicles, upwardly around the lights and into the base from which it flows upwardly from holes in the base side walls.

3,704,366
OUTDOOR LIGHTED ARTIFICIAL CHRISTMAS TREE

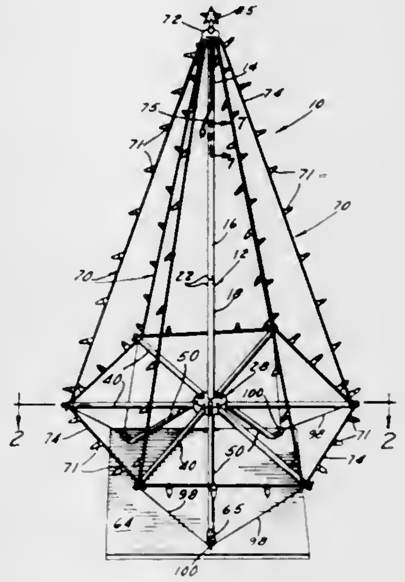
Lawrence J. Korb, 251 Violet Lane, Orange, Calif., and Joseph Soja, 8229 Ersking Green, Buena Park, Calif.

Continuation-in-part of Ser. No. 67,980, Aug. 28, 1970, abandoned. This application Sept. 3, 1971, Ser. No. 177,791

Int. Cl. F21p *1/02;* **A47g** *33/06*

U.S. Cl. 240—10 T **12 Claims**

An outdoor, lighted, artificial Christmas tree decoration comprising a skeleton structure of tubular members having a vertical main support trunk and a plurality of horizontal tubular branch members radially extending outwardly from the main trunk, the trunk and the tubular branch members being detachably secured to an annular hub having included therein securing means for removably securing a plurality of downwardly depending support legs from the hub, whereby the artificial tree can be rigidly attached to a base by means of the support legs. Disposed at the upper end of the main trunk is an electrical junction box in which a plurality of downwardly-extending electrical wires are operably connected to an inlet line, the wires being removably attached at respective ends of the branch members which include clamping means fixed thereon, whereby the free ends of each wire extend horizontally to the adjacent branch member and are secured thereto. The electrical wires are provided with evenly spaced light sockets and lights which are lit when the inlet line is operably connected to a commonly used electric power source.



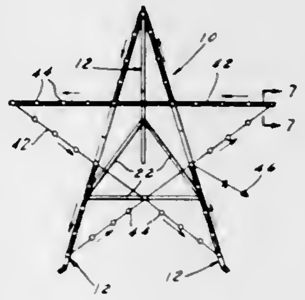
3,704,367
LIGHTED CHRISTMAS STAR DISPLAY

Lawrence J. Korb, 251 Violet Lane, Orange, Calif.

Filed Nov. 12, 1971, Ser. No. 198,264

Int. Cl. F21p *1/02;* **A47g** *33/00*

U.S. Cl. 240—10 S **8 Claims**



There is herein disclosed an outdoor, lighted, Christmas star display device comprising a rigid, lightweight, skeleton structure of tubular members having three main support legs forming a tripodic configuration, the legs being secured together at their outermost ends and evenly spaced apart at the lowermost ends, said legs being secured in position by a plurality of horizontal truss members. Within the upper half of the structure is affixed a horizontal cross bar which is connected to the two forward legs thereof.

Removably attached to the skeleton structure is a string of electrical wires provided with evenly spaced light sockets and lights which are lit when the inlet plug secured thereto is operably connected to a commonly used electric power source.

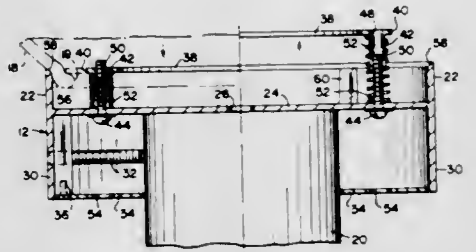
3,704,368
MOUNTING DEVICE FOR A LIGHT FIXTURE GLOBE

Leon R. Patry, Medina, Ohio, assignor to Adjusta-Post Manufacturing Company, Akron, Ohio

Filed June 15, 1971, Ser. No. 153,252

Int. Cl. F21v *17/06*

U.S. Cl. 240—128 **6 Claims**



A base for mounting a globe having an opening therein to a light fixture. The base has a body portion with a bottom wall a cylindrical side wall extending above the bottom wall. A retaining plate which fits within the opening of the globe is resiliently connected to the base by screws passing through the bottom wall of the base so that as the screws are tightened the retaining plate clamps the globe between the retaining plate and the cylindrical wall of the base.

ERRATUM

For Class 250—83.6 R see:
Patent No. 3,704,284

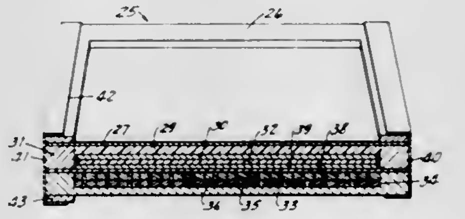
3,704,369
X-RAY FILM CASSETTE

Richard L. Paidosh, Saint Anthony, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 1, 1971, Ser. No. 111,526

Int. Cl. G03b *41/16*

U.S. Cl. 250—65 R **14 Claims**



An X-ray cassette which is convenient for changing the film and which is thin and light-weight. The cassette provides intimate contact between the intensifying screens and the X-ray-sensitive film by the use of continual magnetic forces.

3,704,370
RADIOGRAPHIC INSPECTION TECHNIQUE

William L. Shelton, Springfield, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force

Filed April 9, 1971, Ser. No. 132,821

Int. Cl. G03b *41/16*

U.S. Cl. 250—65 R **8 Claims**

A contrast enhancement technique for use in radiography involves impregnating material to be inspected by nondestructive radiographic techniques with a tetrabromoethane prior to carrying out the actual radiographic inspection and then removing the tetrabromoethane.

3,704,371

RADIATION DETECTION FOR SOFT X-RAYS

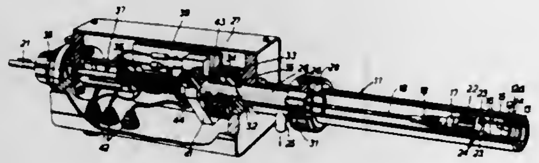
James Anthony Cairns, Didcot, and Colin Leonard Desborough, Faringdon, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed June 1, 1970, Ser. No. 42,166

Claims priority, application Great Britain, May 30, 1969, 27,660/69

Int. Cl. G01t *1/18*

U.S. Cl. 250—83.6 R **14 Claims**



The apparatus comprises a proportional counter with a long tubular nose-piece having an end window. The anode is a short wire parallel to the window and mounted on a support so that the support together with the anode is easily removable and replaceable. The support may be axially movable within the long tubular nose-piece, whereby sensitive tuning to specific characteristic X-rays is possible.

3,704,372

OPTICAL PATTERN TRACER

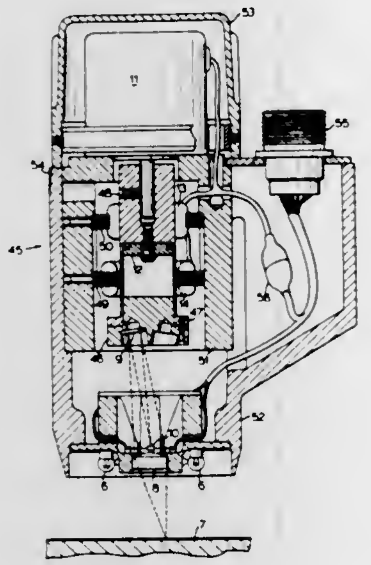
Robert E. Parker, Dundas, Ontario; Malcolm A. Lodge, Charlottetown, Prince Edward Island, and George S. Jewell, Ancaster, Ontario, all of Canada, assignors to Canadian Westinghouse Company Limited, Hamilton, Ontario, Canada

Filed Oct. 19, 1970, Ser. No. 81,784

Claims priority, application Canada, Oct. 20, 1969, 065212

Int. Cl. G05b *1/00*

U.S. Cl. 250—202 **2 Claims**



A rotary scan line/edge tracer using a motor driven mirror to produce the rotary scan. The motor also drives a generator for providing two coordinate reference signals. The mirrors assembly is exchangeable to provide varying scan diameters. The photocell is mounted adjacent the center of the focusing lens at the lower part of the apparatus, thus permitting a coaxial arrangement of the motor and mirror and lens producing a compact assembly. The reference signals are sampled instantaneously to produce coordinate drive signals.

3,704,373

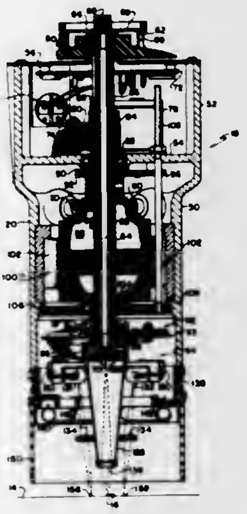
SCANNING HEAD ARRANGEMENT HAVING SERVO MOTOR ARMATURE SECURED TO SHAFT ON WHICH PHOTOCELL IS CARRIED

Francis G. Bardwell, Elmhurst; John W. Dobrauz, and Frank L. Sobchak, both of Chicago, all of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed Sept. 30, 1971, Ser. No. 185,282

Int. Cl. G05b *19/36;* **G06k** *11/02*

U.S. Cl. 250—202 **13 Claims**



The following specification describes a tracing scanning head having a photocell for sensing the presence of a pattern. The cell is supported on one shaft of a pair of coaxial shafts for movement transverse to the shaft axes. A pinion carried by the other shaft engages a rack carried by the one shaft for moving the photocell in response to rotation of the other shaft to compensate for the kerf or tool cutting width. A servo motor armature is fixed to the one shaft and rotates the one shaft and photocell to maintain the photocell angularly aligned with the line. A pair of easily readable knobs are provided at the upper end of the shafts to permit the offset to be easily determined. A preamplifier is carried by the one shaft to amplify low level photocell signals before they are transmitted over slip rings and brushes, and a neon bulb shielded by a metal ring casting lights the drawing pattern. A transparent shield depending from the casting protects the photocell lens. A pair of lamps cast indicia on the paper to enable the direction of scanning head travel to be easily ascertained.

3,704,374

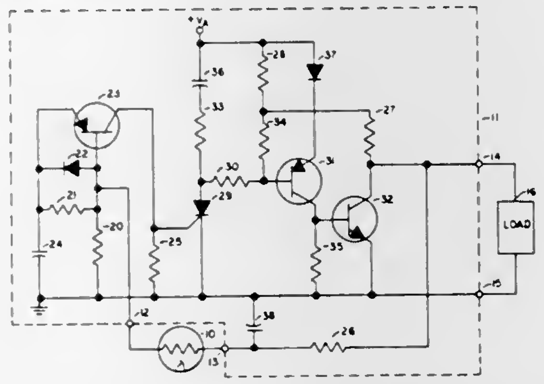
AMBIENT LIGHT VARIATION DETECTOR

Theodore Phillip Kaufman, Dallas, Tex., assignor to Control Technology, Inc., Garland, Tex.

Filed Dec. 23, 1970, Ser. No. 100,923

Int. Cl. G01j *1/32*

U.S. Cl. 250—206 **5 Claims**



Disclosed is a method and apparatus for supplying a control signal in response to an abrupt change in ambient light level and for maintaining such control signal for a controlled time period irrespective of subsequent light level changes during

such controlled time period, such apparatus including a photo-resistor coupled by an input transistor amplifier stage to the trigger input of a silicon controlled rectifier. The silicon controlled rectifier is coupled to an output transistor amplifier stage which provides such control signal.

3,704,375

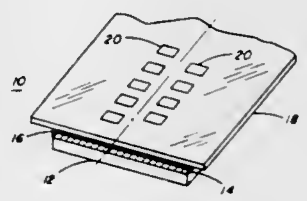
MONOLITHIC DETECTOR CONSTRUCTION OF PHOTODETECTORS

Joseph E. Slawek, Jr., Trumbull, and Harvey W. Altemose, Norwalk, both of Conn., assignors to Barnes Engineering Company, Stamford, Conn.

Filed May 5, 1970, Ser. No. 34,668

Int. Cl. H01l *15/00*

U.S. Cl. 250—211 J **10 Claims**



Photodetector single-element and multi-element arrays of the photovoltaic type are fabricated by photoetching and sensitizing a large semi-conductor PN junction wafer for delineating the desired active junctions. An evaporated coating of dielectric material is supplied covering only a small portion of each active element and then followed by a metallic coating which makes ohmic contact with the active elements. The entire region except for the external lead pattern is then passivated with a coating of dielectric material. A metallic coating is then applied to overlay the ohmic contact areas of the active element. The wafer is then diced into individual detectors or arrays which are mounted on substrates and external leads are then connected to the external lead pads. This construction then allows for the application of interference filters, apertures stops, coded reticles, and/or guard rings to each detector element.

3,704,376

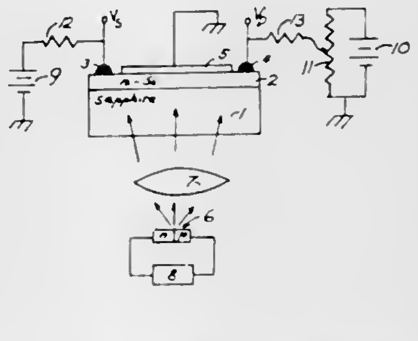
PHOTO-ELECTRIC JUNCTION FIELD-EFFECT SENSORS

Kurt Lehovec, and William G. Seeley, both of Williamstown, Mass., assignors to Inventors & Investors, Inc., Williamstown, Mass.

Filed May 24, 1971, Ser. No. 146,322

Int. Cl. H01j *39/12;* **H01l** *11/00, 15/00*

U.S. Cl. 250—211 J **26 Claims**



The invention concerns improved semiconducting light sensors based on field effect transistor structures. A potential extremum is generated in the channel by illumination and its shift is used as vehicle for minority carrier transport. Photosensitive field effect transistors are integrated with minority carrier sensors.

3,704,377

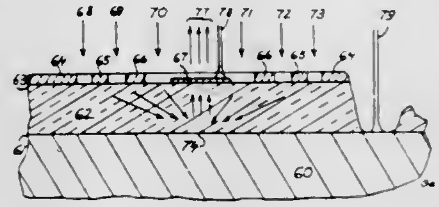
LASER COMPRISING FRESNEL OPTICS

Kurt Lehovec, Williamstown, Mass., assignor to Inventors and Investors, Inc., Williamstown, Mass.

Division of Ser. No. 653,245, July 13, 1967, Pat. No. 3,569,997. This application July 10, 1970, Ser. No. 61,022

Int. Cl. G02f *1/28;* **H01j** *1/62;* **H01s** *3/00*

U.S. Cl. 331—94.5 D **7 Claims**



This invention concerns improved structures for the transformation of radiant energy into electric energy or vice versa. The improvement consists of combining a semiconducting microcircuit element with a Fresnel optical system into a compact integrated structure.

3,704,378

VIEWSCOPE FOR THE BLIND

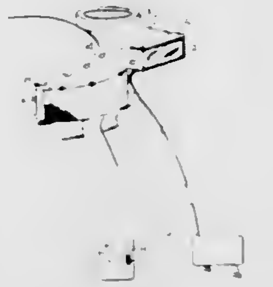
Morse Robb, Trent Road, R. R. 3, Belleville, Ontario, Canada

Filed April 13, 1971, Ser. No. 133,624

Claims priority, application Canada, April 17, 1970, 080,366

Int. Cl. H01j *39/12*

U.S. Cl. 250—222 R **15 Claims**



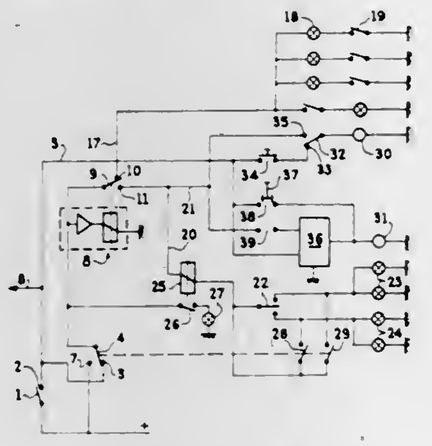
A light-weight headworn scanning system of concave mirrors on a wheel, with a detector-capsule for both visible and infrared radiation, the generated signals from incoming radiation being used to convert the scanned object or scene into a touch-felt image on the skin. A fine wire brush revolving with the mirror-wheel distributes amplified electric signals from the detector to a circle of contacts whose wires lead to an individually form-moulded forehead panel or receiver made up of several hundred electro-motive components, each of which represents a particular tiny spot of the scanned scene and will be activated to touch and withdraw from the forehead skin according to the brightness or darkness of that particular spot in the scene. These electro-motive components of special new design make electrical connection in the system by simple insertion in a uniquely constructed panel, and are as readily removed for inspection. Focus is obtained by moving the detector-capsule nearer to or farther from the concave mirrors, and a plane mirror-(s) can be used to reflect rays from them in a backward direction to the detector in order to accommodate focal length in reduced space. A fan revolving with the mirror-wheel moves air to ventilate the space between the tactile component panel and the forehead.

3,704,379
ELECTRICAL SYSTEM FOR AN AUTOMATIC VEHICLE

Ladislaw Slehofer, Plessis-Robinson, France, assignor to Automobiles Peugeot, Paris and Regie Nationale Des Usines Renault, Billancourt, France, part interest to each

Filed June 28, 1971, Ser. No. 157,148
Claims priority, application France, July 3, 1970, 7024722
Int. Cl. H02g *3/00*

U.S. Cl. 307—10 LS **5 Claims**



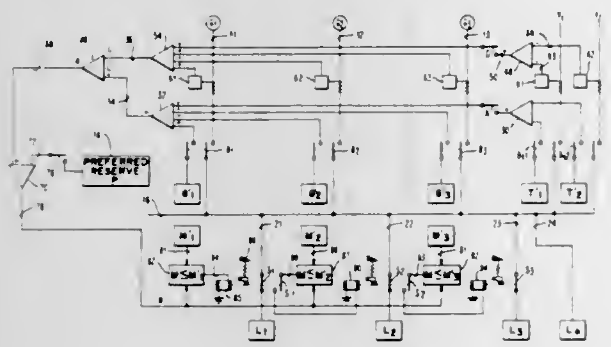
Electrical system for an automobile vehicle, comprising a plurality of apparatuses, such as direction-changing indicators, to be supplied with power. A main switch having an "on" contact is interposed between the apparatuses and the power source. A second switch is connected in series between the source and those of the apparatuses which are desired to operate in a cadenced manner. A cadenced signal generator is interposed between the "on" contact of the main switch and ground and is adapted to actuate the second switch in a cadenced manner.

3,704,380
LOAD SHEDDING APPARATUS

Nathan Cohn, Jenkintown, Pa., assignor to Leeds & Northrup Company, Philadelphia, Pa.

Filed May 6, 1971, Ser. No. 140,774
Int. Cl. H02j *3/38*

U.S. Cl. 307—52 **7 Claims**



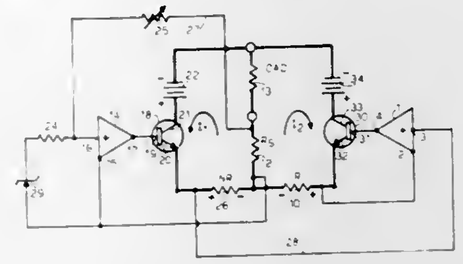
An arrangement which provides for automatically shedding the separable loads of a power distribution area in accordance with predetermined priorities established, not on a basis of system frequency or rate of system frequency change as is present day conventional practice, but on a basis of actual area capability as compared to area load. The total prevailing capability of the power sources of the area is compared with the prevailing area load to produce a signal indicative of the prevailing area reserve power. That signal is compared with the preferred reserve and the difference is then the excess or deficiency with regard to the preferred reserve, defined as the prevailing area margin. That margin in turn is compared with the margin settings for each separable load so that when the margin decreases to a value equal to or below the margin setting for each separable load, that load is automatically sequentially disconnected.

3,704,381
HIGH STABILITY CURRENT REGULATOR CONTROLLING HIGH CURRENT SOURCE WITH LESSER STABILITY

Sarkis Nercessian, Long Island City, N.Y., assignor to Forbro Design Corp., New York, N.Y.

Filed Sept. 2, 1971, Ser. No. 177,376
Int. Cl. H02j *1/10*

U.S. Cl. 307—53 **8 Claims**



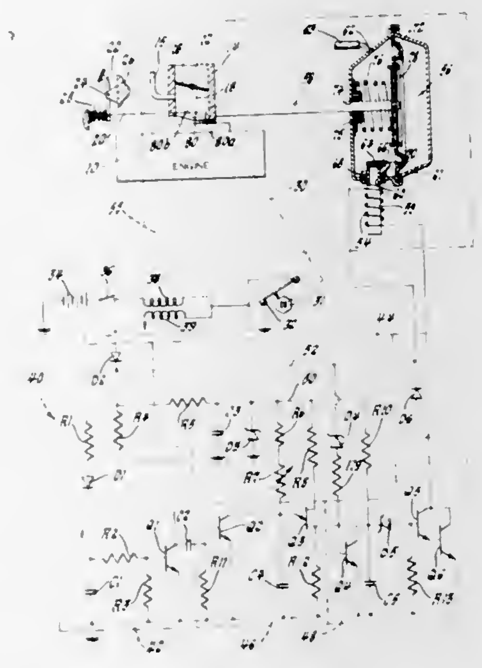
Two current regulated power supplies are connected across a common load impedance. A first regulated power supply having high stability characteristics is connected in a conventional feedback manner to regulate current to the load. A second feedback power supply having lesser stability characteristics than the first but greater output current capabilities is connected to null the sum of opposing voltage drops, one across a current sensing resistor in series with the first power supply and the load and the other in series with the second power supply and the load. The ratio of the resistances of the latter two resistors controls the relative current contribution of the two power supplies to the total load current.

3,704,382
BISTABLE THROTTLE CONTROL SYSTEM

Gerald O. Huntzinger, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 29,111, April 16, 1970. This application July 2, 1971, Ser. No. 159,270
Int. Cl. H03k *5/20*

U.S. Cl. 307—233 **2 Claims**



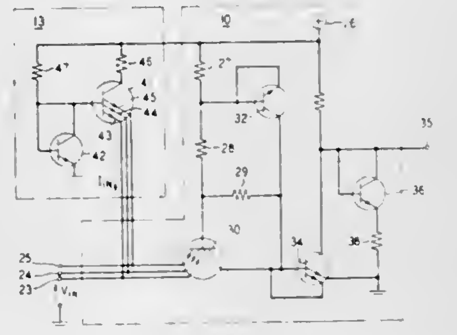
A throttle valve the complete closure of which is prevented by a throttle stop that is advanced be electrically activated vacuum means above a preset speed of an engine responsive to the setting of the throttle valve and retracted below this speed. Pulse generating means connected with the engine provide an input to a timing stage that is operatively connected by capacitor, Zener diode, and amplifier means to means that advance and retract the throttle stop when the speed of the engine is respectively above and below the preset speed.

3,704,383
TRANSISTOR-TRANSISTOR LOGIC CLIPPING CIRCUIT

Cyrus Frank Ault, Wheaton; Ray Allen Reed, Bolingbrook, and William George Reichert, Jr., Wheaton, all of Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 3, 1971, Ser. No. 204,475
Int. Cl. H03k *5/08, 19/08*

U.S. Cl. 307—237 **7 Claims**



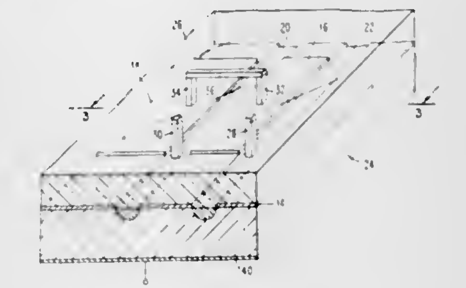
The invention is a combination of a transistor-transistor logic (TTL) gate and a multi-emitter transistor clipping circuit having a different emitter connected to each input of the gate. The multi-emitter transistor is biased so that any signal, reflected by an input of the gate and tending to pull the potential of that input below ground, causes the transistor to conduct and clip the input signal essentially at ground potential.

3,704,384
MONOLITHIC CAPACITOR STRUCTURE

Roy R. DeSimone, Wappingers Falls, and Richard H. Linton, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed March 30, 1971, Ser. No. 129,497
Int. Cl. H01l *11/14*

U.S. Cl. 307—304 **2 Claims**



This specification discloses a polarized capacitor for use in monolithic structures, particularly those using field effect transistors. One plate of this capacitor is a metal layer overlying and insulated from a semiconductor body which has a diffusion in it adjacent to the overlying metal layer. The boundaries of this diffusion form a rectifying junction with the rest of the semiconductor body. When a voltage is applied between the metal layer and the diffusion an electric field is formed under the layer and adjacent to the diffusion so as to create an inversion layer which forms with the diffusion the second plate of the capacitor.

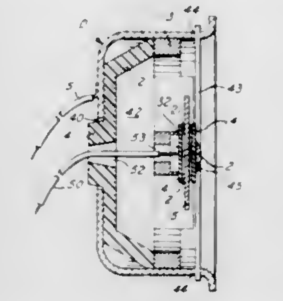
3,704,385
PIEZOELECTRIC TRANSDUCER ASSEMBLY WITH PHASE SHIFTING ACCOUSTICAL PARTS

John C. Schweitzer, and Edward M. Junak, both of Grand Junction, Colo., assignors to Delta Products, Inc., Grand Junction, Colo.

Filed March 2, 1971, Ser. No. 120,252
Int. Cl. H01v *7/00*

U.S. Cl. 310—8.2 **13 Claims**

A piezoelectric element which resonates at a predetermined ultrasonic frequency is mounted in a housing structure formed by a cup and insert structure. A resonant cavity is defined in the cup and the element is held adjacent thereto by bosses formed on a pair of mounting chips. The bosses contact the element along its node so that it may vibrate in an unrestrained manner and the mounting chips define acoustical ports therewith on each side of the element which function to delay and thereby phase shift acoustical waves as they pass therethrough so that acoustical waves at the element's resonant frequency combine in phase at the element's surface. The mounting chips and bosses also function as electrodes and electrical leads are electrically connected thereto for connecting the transducer assembly formed to external circuitry.

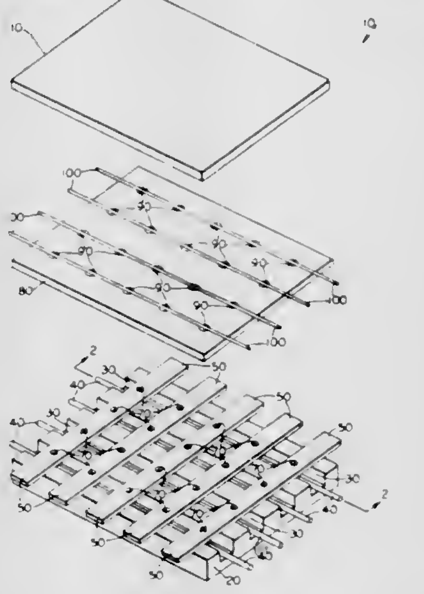


3,704,386
DISPLAY PANEL AND METHOD OF OPERATING SAID PANEL TO PRODUCE DIFFERENT COLORS OF LIGHT OUTPUT

Rudolph A. Cola, Malvern, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed March 19, 1971, Ser. No. 126,154
Int. Cl. H01j *11/02*

U.S. Cl. 313—108 R **12 Claims**



A display panel includes a plurality of cells containing a phosphor material sensitive to ultraviolet light and an ionizable gas which has a characteristic color of cathode glow and, also, generates ultraviolet light when discharged. The gas filling also includes mercury vapor. The method of the invention comprises operating cells at different levels of intensity, determined by input signals so that, at a low level of intensity of cell ionization and current flow, the phosphor is energized and produces its characteristic color of glow which is the dominant light output from the cell. In addition, by operating the panel at a higher level of ionization intensity and current flow, the characteristic color of cathode glow of the gas dominates the phosphor glow and provides the primary glow visible to a viewer. Similarly, if input data signals have widely varying intensities, then the current flow through the display cells varies similarly and the color of light output from the cells varies over a wide range, depending on the relative contribution of each of the components in the cell, the phosphor, the gas, and the mercury.

3,704,387

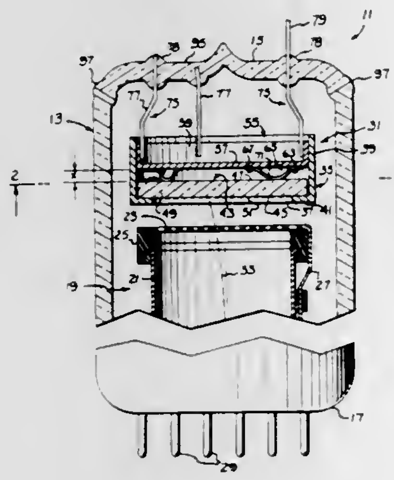
CATHODE RAY TUBE TARGET STRUCTURE SUPPORTED BY THE FORWARD PORTION OF THE ENVELOPE AND HAVING A THERMAL BARRIER THEREIN

Mark E. Carpenter, and Harry E. Smithgall, both of Seneca Falls, N.Y., assignors to GTE Sylvania Incorporated

Filed Feb. 26, 1971, Ser. No. 119,146

Int. Cl. H01j *1/88, 19/42*

U.S. Cl. 313—257 **11 Claims**



An improved electrical input-output target structure is provided for a cathode ray tube. This structure, being supported by the forward closure portion of the envelope, comprises an annular first metallic member, a planar target member seated thereon to make peripheral electrical contact therewith, a second metallic member having a planar surface predeterminately spaced from the target member to provide a thermal barrier therebetween, and resilient means oriented peripherally within the barrier space to exert pressure against the target member thereby assuring positive electrical contact between the target and the annular member.

3,704,388

SPARK GAP FOR SURGE DIVERTERS

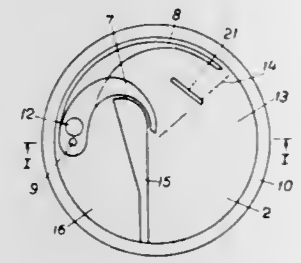
Bengt Johansson, and Erland Nilsson, both of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Oct. 1, 1970, Ser. No. 77,218

Claims priority, application Switzerland, July 6, 1970, 9315/70

Int. Cl. H02h *1/00*

U.S. Cl. 315—36 **8 Claims**



A spark gap for surge diverters is composed of a plurality of plates of insulating material stacked one on the other with spaces there between. Electrodes are carried on each face of the plates. The electrodes have parts connected to each other by attachment members passing through the plates. The electrodes at each space have vertically aligned parts forming a spark gap and the parts deviating from vertical alignment and forming a running-out path which becomes substantially parallel to the plane of the plates.

3,704,389

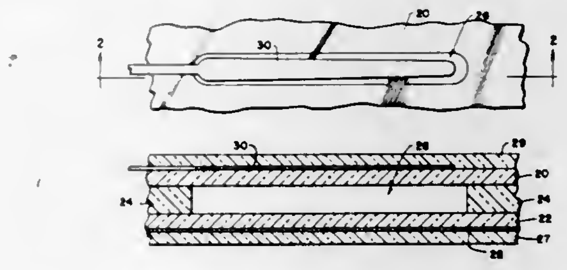
METHOD AND APPARATUS FOR MEMORY AND DISPLAY

Walter B. McClelland, Park Ridge, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed June 24, 1970, Ser. No. 49,436

Int. Cl. H01j *17/36*

U.S. Cl. 315—84.5 **31 Claims**



A plasma-discharge display and data storage device wherein a glow discharge condition in a gas-filled, dielectric envelope is transferred from a region between a pair of transferor electrode conductors to a region between a pair of transferee electrode conductors by causing an AC voltage applied between the transferee electrode conductors to cause an associated potential field inside the gas-filled envelope to reach a glow-discharge-sustaining magnitude prior to the time that the AC voltage applied between the pair of transferor electrode conductors causes an associated potential field within the gas-filled envelope to reach a magnitude sufficient to sustain a glow discharge; and a tapered electrode conductor in which a plasma or glow discharge in the gas occurs preferentially near the wide end of the tapered electrode conductor.

3,704,390

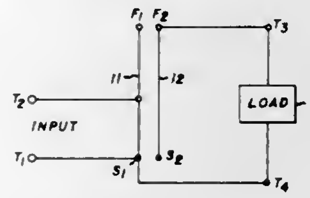
COMBINED CAPACITOR-INDUCTOR REACTOR DEVICE HAVING TRANSFORMER CHARACTERISTICS

Frederick W. Grahame, 22 Grant Avenue, Glens Falls, N.Y.

Continuation of Ser. No. 40,272, May 25, 1970, abandoned. This application Jan. 26, 1972, Ser. No. 221,113

Int. Cl. H01f *15/14, 27/02*

U.S. Cl. 315—276 **6 Claims**



A combined capacitor-inductor reactor formed by spaced-apart layers of insulation and conductive foil rolled together around a core member to form a combined capacitor-inductor reactor. By connecting the input supply terminals to two different points on the same conductive foil and deriving the output from across a portion of the second foil which is coextensive with the part of the first coil intermediate the input terminals, the structure will exhibit capacitor connected transformer characteristics suitable for use as a fluorescent lamp starting and ballast circuit.

3,704,391

CRYOGENIC CURRENT LIMITING SWITCH

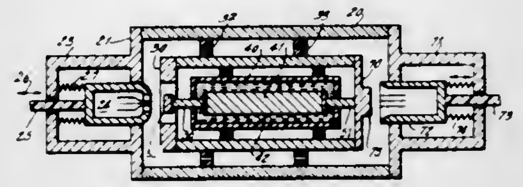
Lorne D. McConnell, Radnor, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Nov. 10, 1970, Ser. No. 88,327

Int. Cl. H02h *7/22*

U.S. Cl. 317—11 C **13 Claims**

A superconductive element to be used for current limiting action is arranged in the interior of a tubular conductor and is in a substantially field-free region during normal current conduction. The vacuum used as thermal insulation for the superconductor element is further used as a switching medium for the contacts of switching devices associated with the superconductor. A non-linear resistor material such as pure tungsten is connected in parallel with the superconductor so that



current commutates into the non-linear resistor when the superconductor switches to its normal conduction characteristics.

3,704,392

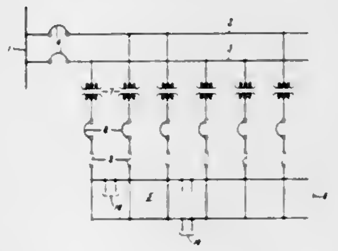
NETWORK RECLOSING RELAY

Muchuan M. Chen, Springfield, and William C. Kotheimer, Lansdowne, both of Pa., assignors to General Electric Company

Filed Feb. 1, 1972, Ser. No. 222,526

Int. Cl. H02h *3/26*

U.S. Cl. 317—23 **9 Claims**



A static protective relay comprises a reclosing unit for controlling a circuit breaker which when closed couples a primary feeder or a source of supply of a three-phase power distribution system to an alternating current secondary network through a network transformer. The reclosing unit senses when a voltage corresponding to the transformer voltage minus the network voltage is within a prescribed angular displacement range with respect to the network voltage and when its magnitude with respect to the network voltage is within a prescribed magnitude range. Upon the coincidence of both conditions, a reclose signal is provided to the network protector to cause it to connect the transformer to the network.

3,704,393

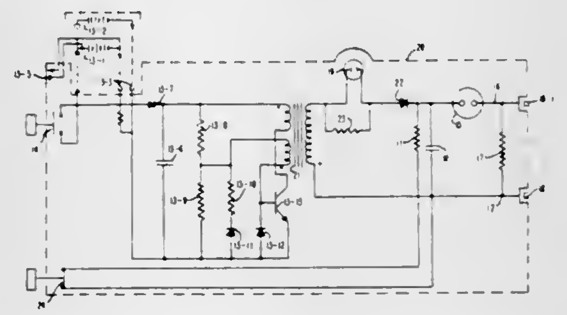
CAPACITOR DISCHARGE TYPE BLASTING MACHINES

Frank J. Digney, Jr., 1 Long Pound Road, Hewitt, N.J., and Earl M. Phinney, 10 Ceperley Avenue, Oneonta, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,187

Int. Cl. F23g *7/02*

U.S. Cl. 317—80 **11 Claims**



Capacitor discharge blasting machines for initiating electro-explosive devices, e.g., electric blasting caps which comprises in combination, means for supplying direct current at a controlled rate and at potentials above 1,500 volts, a nonelectrolytic capacitor capable of accumulating charges at potentials in excess of 1,500 volts and capable of withstanding repeated charge-discharge cycles, means for indicating that such capacitors are being charged, electronic firing switch and interlock means positioned between and communicating with said capacitor, and electronic firing switch means for delivering current from said capacitor to current output terminals and thence to an electric blasting cap firing circuit, and means for bleeding off unwanted or residual charges from the power supply and current-discharging means.

3,704,394

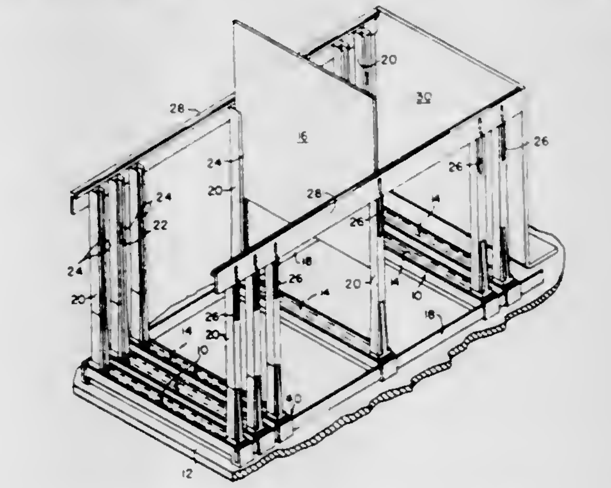
RECEPTACLE FOR PRINTED CIRCUIT STRUCTURES WITH BUS BAR MOUNTING MEANS

Lennart B. Johnson, Topsfield, Mass., assignor to Teradyne, Inc., Boston, Mass.

Filed July 6, 1971, Ser. No. 159,786

Int. Cl. H05k *7/18*

U.S. Cl. 317—101 DH **8 Claims**



A connection and mounting receptacle for printed circuit cards has pairs of slotted stiffly resilient card guides, each of which has a pair of opposing nodes protruding into the slot from slot-forming side walls which are not connected in the region of the nodes to provide a spring grip on an inserted card, and has two tie beams interconnecting the free ends of the card guides. A connector which seatingly receives the contact-bearing edge of the circuit card carries the paired card guides.

3,704,395

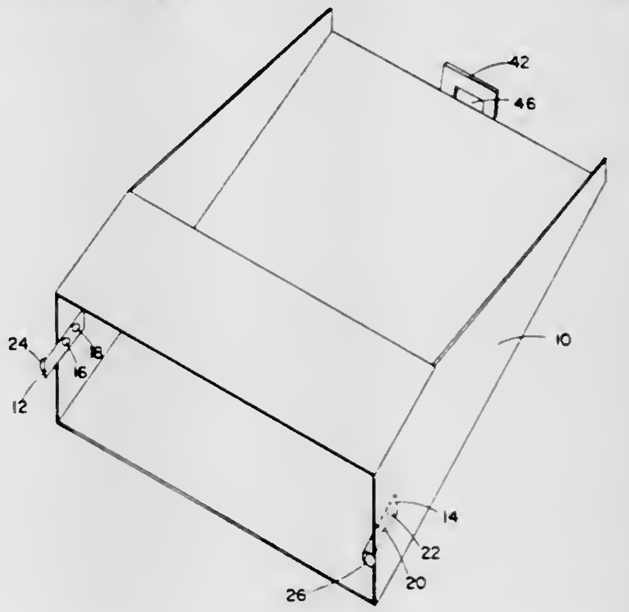
AIRCRAFT ELECTRONIC APPARATUS WITH SUPPORTING RACK

William J. Hamer, 201 Brisbane Avenue, Westerville, Ohio, and Randal W. Goshen, 3520 Liv-Moor Drive, Columbus, Ohio

Filed March 15, 1971, Ser. No. 124,260

Int. Cl. H02b *1/04*

U.S. Cl. 317—120 **4 Claims**



A mounting arrangement for positioning and maintaining in position a chassis having apparatus thereon in a rack permanently mounted in an aircraft. The chassis/rack for airborne electronic apparatus has a unitized construction exemplified by simplicity of inserting and removing the apparatus from the rack—but is yet extremely rugged to withstand the most severe vibration in an aircraft. The latching mechanism comprises a spring-like pivot arm mounted inside of the chassis with a circular button with spherical crown on an end protruding from the chassis for fitting into and securing the apparatus in the rack. The chassis and rack are of given sizes to permit a snug fit interlock.

3,704,396
SAFETY DEVICE FOR MACHINES
John L. Macdonald, Aurora, Ind., assignor to Cincinnati Incorporated, Cincinnati, Ohio
Filed May 12, 1971, Ser. No. 142,620
Int. Cl. G02f *1/28*
U.S. Cl. 317—124 **13 Claims**

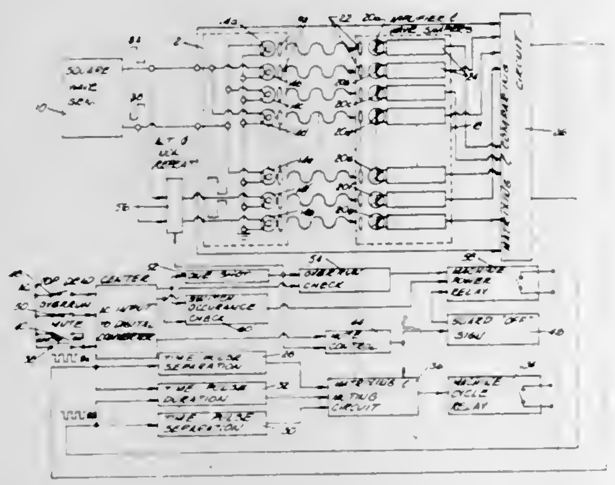
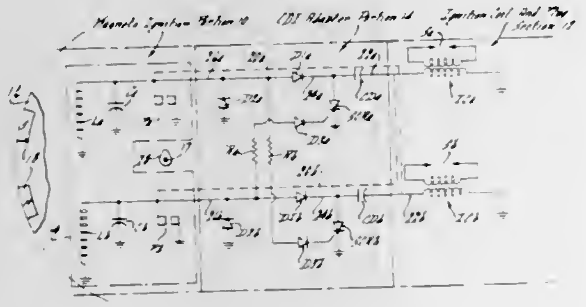


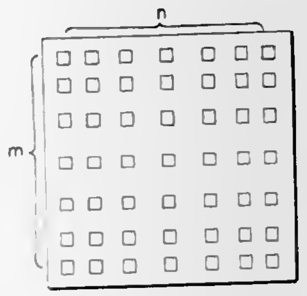
Photo-electric guard for machines, having a plurality of light sources and a corresponding plurality of photo-responsive devices. Each light source is powered by a modulated electric supply and is aimed at the corresponding one of the photo-responsive devices. The output of each photo-responsive device is reshaped and compared with the input to the light source, and any mismatch is effective to stop further machine operation.

3,704,397
IGNITION ADAPTER CIRCUIT
Thomas J. Crouch, Leonard, Mich., and George E. Gynn, Fort Wayne, Ind., assignors to Syncro Corporation, Oxford, Mich.
Filed Dec. 13, 1971, Ser. No. 207,261
Int. Cl. F02p *3/06;* **H01t** *15/02*
U.S. Cl. 317—157.6 **6 Claims**



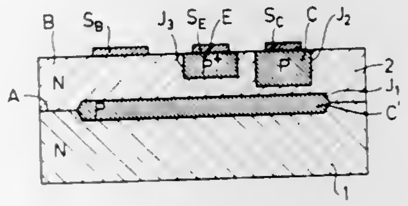
An electrical ignition system for adapting a conventional magneto spark ignition system to a capacitor discharge ignition system.

3,704,398
MULTI-EMITTER POWER TRANSISTOR HAVING EMITTER REGION ARRANGEMENT FOR ACHIEVING SUBSTANTIALLY UNIFORM EMITTER-BASE JUNCTION TEMPERATURES
Katsushige Fukino, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan
Filed Feb. 10, 1971, Ser. No. 114,169
Claims priority, application Japan, Feb. 14, 1970, 45/12453
Int. Cl. H01l *11/00, 15/00*
U.S. Cl. 317—235 R **7 Claims**



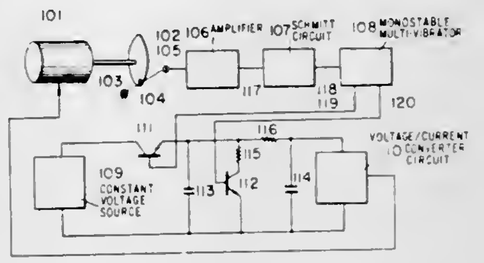
A transistor having a plurality of divided emitter regions. The spacing between adjacent emitter regions at the central portion of the transistor is greater than that between adjacent peripheral emitter regions. This arrangement provides a more uniform distribution of junction temperatures. The structure finds particular utility in power transistors.

3,704,399
SEMICONDUCTOR DEVICE AND CIRCUIT ARRANGEMENT COMPRISING THE DEVICE
Rene Glaise, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.
Filed April 15, 1971, Ser. No. 134,342
Claims priority, application France, April 17, 1970, 7013973
Int. Cl. H01l *11/06*
U.S. Cl. 317—235 R **5 Claims**



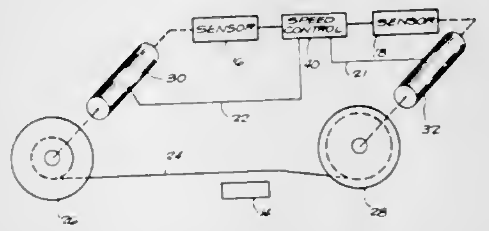
Semiconductor device comprising a semiconductor body having a base region of a first conductivity type and an emitter and collector region of a second conductivity type formed side by side in said base region and having like the latter contacts located on a face of said body, to which they are adjacent, characterized in that the device comprises at least one further region of the second conductivity type arranged near the collector and separated therefrom by the semiconductor material of the base region so that at a bias voltage at the collector-base junction exceeding a given threshold value the depletion zone of said junction attains said further region. The device has three stable states.

3,704,400
APPARATUS FOR CONTROLLING THE TENSION OF A MAGNETIC TAPE
Takeshi Goshima, and Yutaka Kohtani, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 23, 1970, Ser. No. 83,349
Claims priority, application Japan, Oct. 31, 1969, 44/87479
Int. Cl. H02r *7/28*
U.S. Cl. 318—6 **7 Claims**



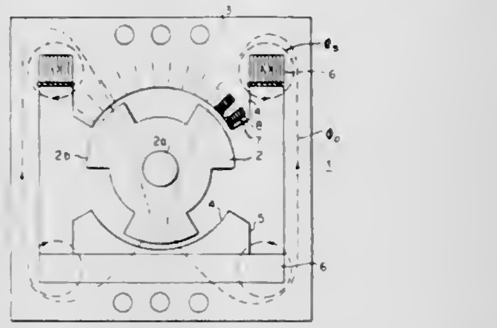
In order to transport a strip such as magnetic tape with a constant tension, the reel driving motor is driven by current flowing in proportion to the time required for one revolution of the motor or in inverse proportion to the number of revolutions of the motor. So that the transporting strip such as magnetic tape is maintained at a constant velocity and with a constant tension, and thus any variations in the level and frequency may be eliminated completely.

3,704,401
DUAL MOTOR CONTROL
Robert N. Miller, Dallas, Tex., assignor to International Computer Products, Inc., Addison, Tex.
Filed July 20, 1970, Ser. No. 56,545
Int. Cl. H02p *5/50*
U.S. Cl. 318—7 **16 Claims**



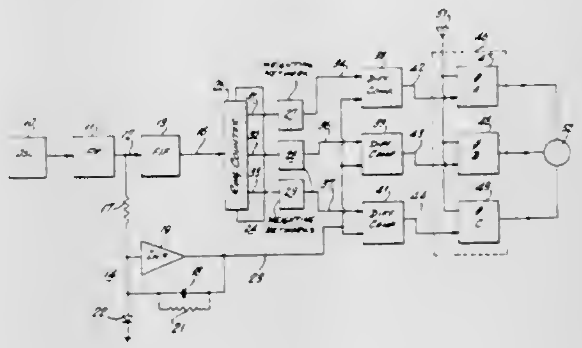
A dual motor drive system for synchronously controlling a first motor to drive a first reel and a second motor to drive a second reel to maintain a substantially constant, symmetrical linear velocity of material transferred between said reels as the diameter of the spools material varies as a non-linear function of the amount of material stored thereon. A reference signal is provided which is a function of a desired linear velocity of material transferred between the two reels. A summed signal is provided which varies as a function of the sum of the speeds of the first and second motors. The summed signal is compared with the reference signal to provide an error signal. The power supplied to the first motor driving the first of the two reels, which functions as a take-up reel, is controlled by the error signal, thereby controlling the speed of the motor. A smaller amount of power is supplied to the second motor associated with the second reel functioning as the supply reel to overcome inertia in the system and reduce the effects of coulomb resistance during starting and to provide braking action to maintain tension on the length of material extending between the two spools when running or stopping. Rate of movement of material between the two reels can be controlled or direction of movement reversed by changing the reference signal level or polarity respectively. Upon reduction of rate of movement or reversal, the second motor is driven to provide positive braking action or to change direction of movement as required with the previously driven first motor then operating as a brake.

3,704,402
SPEED CONTROLLED SYNCHRONOUS INVERTER MOTOR
Wilhelm Leitgeb, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Munich, Germany
Filed Feb. 17, 1971, Ser. No. 116,105
Int. Cl. H02k *19/06*
U.S. Cl. 318—166 **1 Claim**



A speed controlled synchronous inverter motor is supplied from a multiphase alternating-current line of substantially constant frequency and voltage through rectifiers and inverters via a direct-current intermediate circuit. The motor is a medium-frequency machine whose armature winding and excitation winding are both located on the non-rotating part. The excitation winding is connected in series to the direct-current intermediate circuit and works also as a smoothing reactor.

3,704,403
POWER SUPPLY CIRCUIT TO SIMULTANEOUSLY VARY FREQUENCY AND AMPLITUDE IN A MOTOR SPEED CONTROL
Jimmie Douglas Gillett, Garland, Tex., assignor to Electric Machinery Mfg. Company, Minneapolis, Minn.
Filed Feb. 23, 1972, Ser. No. 228,650
Int. Cl. H02p *5/28*
U.S. Cl. 318—227 **13 Claims**



A multiple pulse pulse-width modulation system is disclosed for controlling the speed of a standard three-phase induction motor or synchronous motor. An oscillator provides a clock signal which is divided down by a counting chain of two flip-flops to provide a first signal which is half the frequency of the clock signal and a second signal which is a quarter of the frequency of the clock signal. The first signal is integrated over the half cycles thereof while the second signal is applied to a digital wave form synthesizer which includes shift register stages and weighting resistors. The wave form synthesizer provides three output signals which are a stepwise approximation to a three-phase sine wave. Each of the three phases of the three-phase sine wave are applied to a differential comparator for comparison with the output of the integrator. The oscillator is variable in frequency so that the frequency of the three-phase sine wave and the amplitude of the integrator output can be varied thereby.

3,704,404
REGULATING MEANS

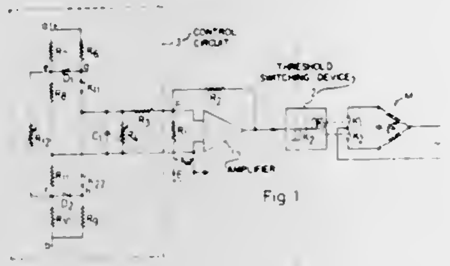
Kristen Iversen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Dec. 10, 1970, Ser. No. 96,719

Claims priority, application Germany, Dec. 17, 1969, P 19 63 228.1

Int. Cl. G05b *11/06*

U.S. Cl. 318—290 **4 Claims**



The invention relates to a servomotor regulating unit having an adjustable proportional range. The servomotor is responsive to the output variable of the regulator which in turn is responsive to a sensed deviation voltage. An R-C unit in a an input circuit of the regulator has the charging voltage thereof switched on and off in synchronism with the switching on and off of the servometer. In known regulators the width of the proportional range and the amplification is adjusted by varying the charging voltage of the R-C unit with a potentiometer whereas in this invention they are adjusted independently of each other by limiting the voltage at the R-C unit to an adjustable value that is below the charging voltage and by making the charging time-constant of the R-C unit independent of this limiting value.

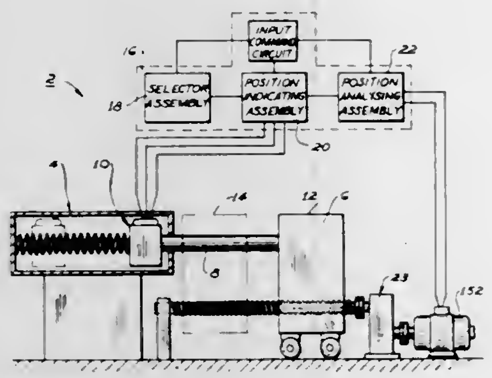
3,704,405
POSITIONING DEVICE

Earl D. Miller, Jr., Tallmadge, and Ronald J. Kindy, N. Canton, both of Ohio, assignors to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Filed Jan. 15, 1971, Ser. No. 106,852

Int. Cl. G05b *1/06*

U.S. Cl. 318—467 **20 Claims**



A system for controlling a drive mechanism to selectively move a work member from an existing position to a desired position. The system includes a probe-like sensing member adapted to engage and be moved by the work member. The sensing member is operably connected to a signalling mechanism adapted to produce an output signal related to the position of the work member. A position selecting assembly including at least one selector unit adapted to be selectively pre-set corresponding to a desired position and to produce an output signal related thereto. A position indicating assembly is operably connected to the signalling mechanism and the position selecting assembly being adapted to receive the respective output signals therefrom and produce a different signal related to the variation between the existing position to the desired position of the work member. A signal analyzing assembly is operably connected to the position indicating assembly for analyzing the output signal thereof and for producing an output signal to activate the drive mechanism in response thereto to move the work member from the existing position to the desired position.

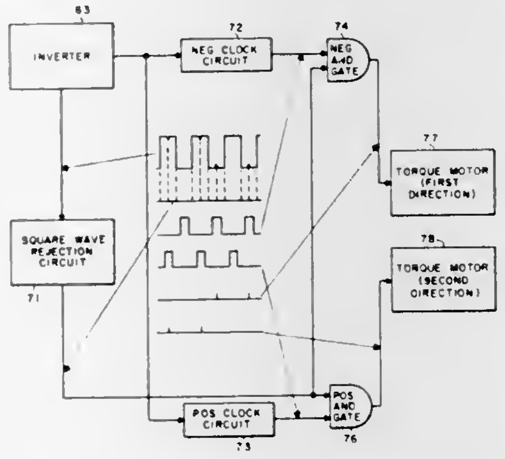
3,704,406
GYRO SERVO CONTROL SYSTEM & STRUCTURE

James M. Lindsey, Houston, Tex., assignor to Sperry Sun Well Surveying Company, Sugar Land, Tex.

Filed Nov. 21, 1969, Ser. No. 879,006

Int. Cl. B64c *17/02*

U.S. Cl. 318—648 **17 Claims**


INVERTER
NEG CLOCK CIRCUIT
NEG AND GATE
SQUARE WAVE REJECTION CIRCUIT
TORQUE MOTOR (FIRST DIRECTION)
TORQUE MOTOR (SECOND DIRECTION)
POS CLOCK CIRCUIT
POS AND GATE
63
72
74
77
78
71
73
76

In a system for controlling the tilt of a rotor on a gyro, a sensing device for detecting tilt, together with electrical circuit components for providing an error signal are mounted upon the rotor housing. The error signal for providing a corrective signal to a torque motor control system is transmitted via a circuit supplying rotor power. By using the power supply path to transmit the error signal, it is unnecessary to use any sort of friction producing physical attachment with the components of the gyro in order to transmit such error signal to the torque motor control system.

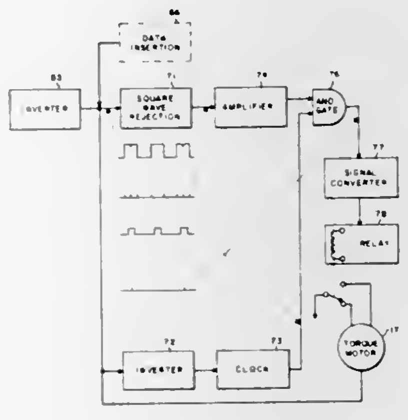
3,704,407
GYRO SERVO CONTROL SYSTEM & STRUCTURE

James M. Lindsey, Houston, Tex., assignor to Sperry Sun Well Surveying Company, Sugar Land, Tex.

Filed Nov. 21, 1969, Ser. No. 879,007

Int. Cl. B64c *17/02*

U.S. Cl. 318—648 **12 Claims**



In a system for controlling the tilt of a rotor on a gyro, a sensing device for detecting tilt, together with electrical circuit components for providing an error signal are mounted upon the rotor housing. The error signal, which is transmitted by the circuits supplying power to the gyro rotor, is supplied to a control system which in turn provides a signal to a torqueing motor. The torque motor is continuously operated, and normally rotates in a first direction unless a signal is received from the sensing device, which detects tilt in only one direction, whereupon the torque motor is reversed to apply a corrective force to the gyro system. Use of the power supply path to transmit the error signal obviates the use of any friction-producing physical attachment with the components of the gyro in order to transmit such error signal to the torque motor control system.

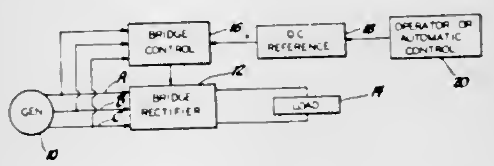
3,704,408
CONTROLLED RECTIFIER FIRING SYSTEM WITH VOLTAGE COMPENSATION

Thaddeus Schroeder, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 15, 1971, Ser. No. 198,545

Int. Cl. H02m *7/20*

U.S. Cl. 321—5 **3 Claims**



Firing angle control for controlled rectifiers in a bridge rectifier connected with an alternating voltage input is developed from control voltages derived from the alternating voltage input. In a three-phase system, each line-to-line voltage is used as a ramp in generating gate firing signals for an associated controlled rectifier in a respective line. To maintain the output at a constant voltage level, automatic compensation for voltage variations at the input is provided by modifying the ramp voltages to advance or retard the firing angle when the input is increased or decreased respectively: in one embodiment, the ramp voltages are combined with DC offset voltages and AC ripple voltages to compensate for voltage variations.

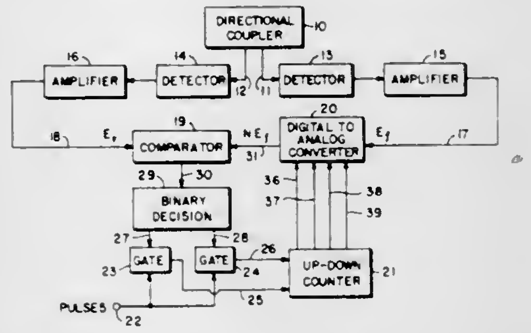
3,704,409
DIGITAL REFLECTION COEFFICIENT DETECTOR

Johannes A. F. Oomen, Cincinnati, Ohio, assignor to Avco Corporation, Cincinnati, Ohio

Filed May 24, 1971, Ser. No. 146,069

Int. Cl. G01r *27/00*

U.S. Cl. 324—57 R **2 Claims**



There are shown herein an apparatus and method for indicating and storing the modulus of the reflection coefficient in a radio frequency system. The apparatus makes use of voltages E_r and E_f. Voltage E_r is a measure of the power reflected back from the load. Voltage E_f is a measure of the forward power sent toward the load by the source. The analog quantities E_r and NE_f are applied to a comparator, the output of which is utilized to control an up-down counter which stores the quantity N, the modulus of the reflection coefficient. The up-down counter controls a digital to analog converter which utilizes the quantity E_f as a reference and produces the analog output NE_f.

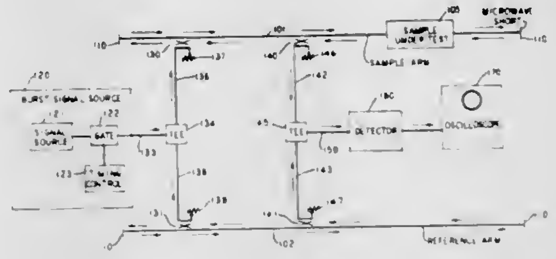
3,704,410
BRIDGE CIRCUIT UTILIZING PULSE ECHO TECHNIQUE

Kevin Christopher O'Brien, Parsippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 29, 1971, Ser. No. 157,926

Int. Cl. G01r *27/04*

U.S. Cl. 324—58 A **10 Claims**



Sensitivity of a bridge circuit for measuring propagation characteristics of test samples is increased by employing a pulse-echo technique. The bridge includes sample and reference arms having substantially identical characteristics. Each of the bridge arms is arranged so that a single pulse signal is caused to propagate the length of each arm a plurality of times. The pulse signals are periodically sampled and compared to generate a difference signal. In turn, the difference signal is utilized to determine a characteristic of a test sample, for example, attenuation.

3,704,411
PORTABLE DEVICE FOR TESTING ELECTRICAL APPLIANCES

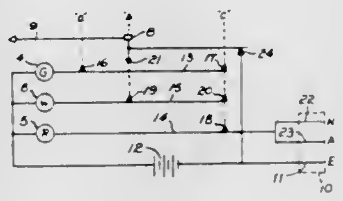
Ian K. Jamieson, 9 Kinkaid Road, Elizabeth East, Australia

Filed Aug. 14, 1970, Ser. No. 63,882

Claims priority, application Australia, Aug. 18, 1969, 59660; March 4, 1970, 0514

Int. Cl. G01r *31/02*

U.S. Cl. 324—53 **4 Claims**



A device operable as a torch or a testing device to test the circuitry of an electrical appliance for safety. The appliance is plugged into the device whereby the device can indicate the continuity of the earths connection of the appliance and also indicate and detect any leak between the windings of the appliance and its earth connection. The device can also be used to test its own indicators before being used as a test appliance.

3,704,412
SCANNING IMPEDANCE MEASURING SYSTEM EMPLOYING A SPIRAL SENSING ELEMENT

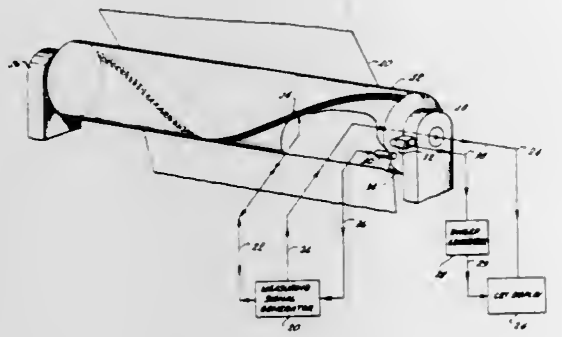
John W. Lundstrom, Glendora, Calif., assignor to Moisture Register Company, Alhambra, Calif.

Filed Feb. 11, 1971, Ser. No. 114,659

Int. Cl. G01r *27/26*

U.S. Cl. 324—61 R **10 Claims**

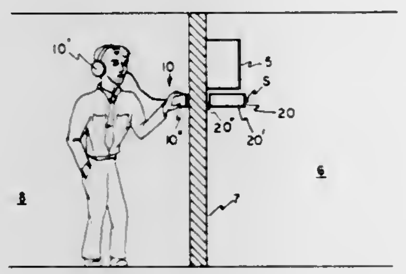
Apparatus for periodically scanning the impedance across a web of material and displaying the impedance variations. A sensing element having a pair of parallel, spaced metallic strips spirally mounted on the external surface of a carrier cylinder is positioned across the web for minimal surface contact therewith. A small section of the width of the web is in surface contact with the spaced parallel strips and forms an impedance therebetween to be measured. The section of the web being measured moves, in affect, across the web as the cylinder rotates. The measuring circuitry includes a periodically balanced impedance bridge circuit and a triggering mechanism for the measuring and display systems which generates simultaneous isolated trigger pulses.



3,704,413

METHOD OF TRANSLATING THE LOCATION OF A PREDETERMINED POSITION ON ONE SIDE OF A SUBSTANTIALLY NONFERROUS STRUCTURAL BARRIER OF A BUILDING TO AN OPPOSITE SIDE OF SAID BARRIER

Maurice E. Blevins, 98 Canterbury Road, Spartanburg, S.C.
Filed Jan. 7, 1970, Ser. No. 1,100
Int. Cl. 340 *258 D*; **G01n** *27/00*; **G01r** *19/16, 33/00*
U.S. Cl. 324—67 **9 Claims**

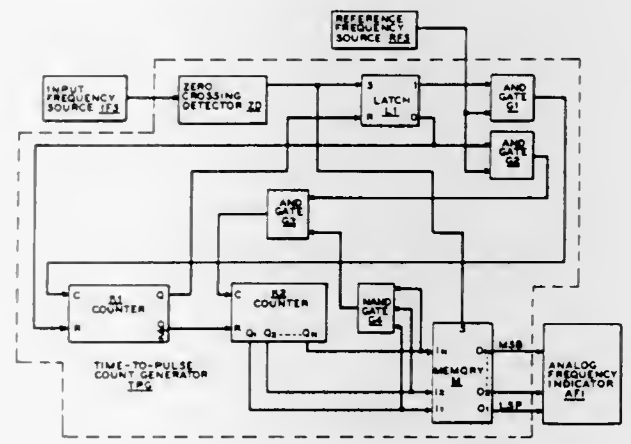


A device and method for locating objects through a substantially nonferrous barrier, the use of which may also be applied for determining the thickness of such a barrier and for localized surveying. An audio oscillator serves as a transmitter which emits signals that are picked up by headphones connected to a resonant tuned circuit. The transmitter is placed on or adjacent an object to be located and is set to transmit. Signals from the transmitter may then be located by the headphones and the peak sound from the signal or a null in the signal may be detected to pinpoint the position of the transmitter on the opposite side of the barrier. Whether or not the peak sound or the null is detected depends upon the attitude of the transmitter coil with respect to the receiver coil. For measuring thickness of a particular barrier, the transmitter is located as stated above after which a null circle is detected radially out from the point where the transmitter was located. The distance between the point of location of the transmitter and the null circle is a function of the thickness of the barrier. Alternatively, the null circle diameter may be detected and used to determine barrier thickness.

3,704,414

FREQUENCY METER

John A. Herbst, Morristown, N.J., assignor to Bogue Electric Manufacturing Company, Paterson, N.J.
Filed Jan. 18, 1971, Ser. No. 107,010
Int. Cl. G01r *23/14, 23/02*
U.S. Cl. 324—79 D **10 Claims**

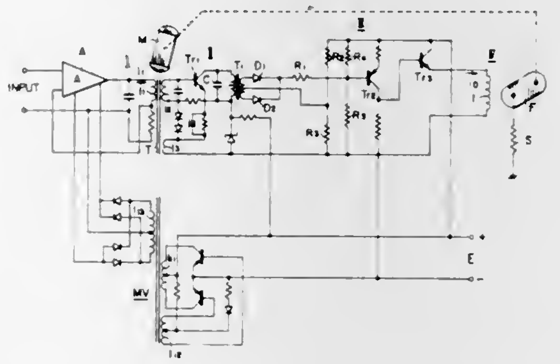

REFERENCE FREQUENCY SOURCE RFS
INPUT FREQUENCY SOURCE IFS
ZERO CROSSING DETECTOR ZD
LATCH
AND GATE
AND GATE
AND GATE
COUNTER
COUNTER
NAND GATE
MEMORY
TIME-TO-PULSE COUNT GENERATOR TPG
ANALOG FREQUENCY INDICATOR AFI

A frequency monitor for giving a meter indication of the frequency of a signal utilizes a zero-crossing detector to control the counting of clock pulses to a pair of cascaded binary counters. The first counter covers the bulk of the period between zero crossings and the second counter covers the remainder thereof. The count in the second counter is periodically stored and fed to a digital-to-analog converter which includes means for performing an analog linearization of currents which energize a meter; such meter being calibrated in Hertz per unit current.

3,704,415

AUTOMATIC BALANCING MEASURING METER

Takashi Yamanaka; Rinichi Miyauchi; Hisaya Fujita, and Nobuo Kaieda, all of Tokyo, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan
Filed April 2, 1970, Ser. No. 25,023
Int. Cl. G01r *17/06, 33/00*
U.S. Cl. 324—99 R **4 Claims**

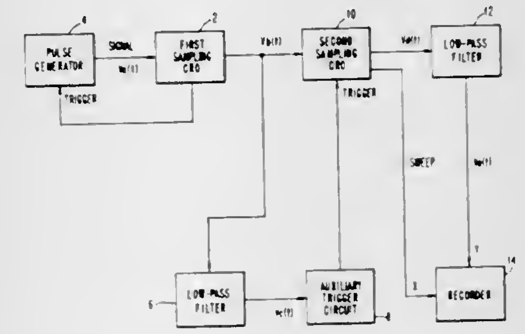


An automatic balancing measuring meter is comprised by a magnetic core including an input, an output and a positive feedback windings wound thereon, a movable magnet providing a magnetic flux corresponding to the angle of rotation thereof, an amplifier including a tuning circuit connected to the output winding, a feedback circuit to apply a portion of the output from the amplifier to the positive feedback winding, a detector to detect the output from the amplifier, and torque generating means energized by the detector to drive the movable magnet to cause the flux produced by the movable magnet to balance with the flux produced by the input winding.

3,704,416

SEQUENTIAL SAMPLING SYSTEM

Brian J. Elliott, New York, and John L. Staples, Tarrytown, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed July 13, 1970, Ser. No. 54,182
Int. Cl. G01r *13/20*; **H03k** *17/00*
U.S. Cl. 324—121 R **3 Claims**

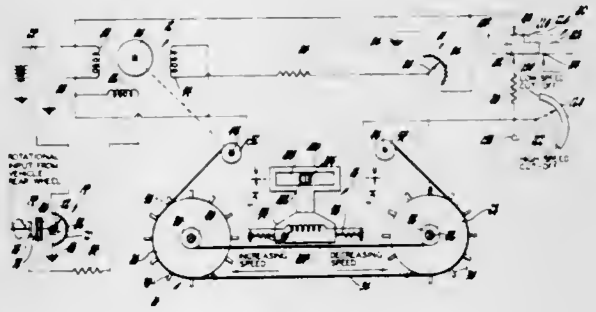


Although conventional sampling techniques give minimum risetime in the oscillography of repetitive electrical waveforms, system timing uncertainties introduce drift and jitter errors which are typically comparable in magnitude to the cathode ray oscilloscope risetime. By using two sampling oscilloscopes in cascade and in conjunction with special triggering methods, it is possible to reduce the drift by a factor of 10^{-3} down to a level of less than 10^{-14} sec./minute. The use of two sampling oscilloscopes in cascade thereby allows highly effective jitter filtering with the result that the new system has greatly improved accuracy in portraying the waveforms of very fast electrical phenomena.

3,704,417

VEHICLE SPEED INDICATOR

Judson S. Davis, Davidson, Mich., assignor to General Motors Corporation, Detroit, Mich.
Division of Ser. No. 1,422, Jan. 8, 1970, Pat. No. 3,635,306.
This application July 22, 1971, Ser. No. 165,192
Int. Cl. G01p *3/52*
U.S. Cl. 324—163 **4 Claims**

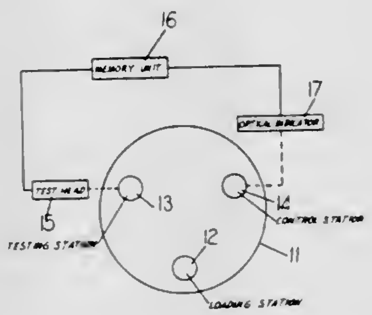


A vehicle speed indicator and controller having a drive motor with differential field windings to position a constant force extension spring between two pulleys to indicate the vehicle speed. A potentiometer supplies a signal corresponding to vehicle speed to one of the differential field windings to cause rotation of the drive motor output shaft. Another potentiometer supplies a signal corresponding to the position of the constant force extension spring to the remaining differential field winding to stop rotation of the drive motor output shaft. The speed controller has a tape having magnetic properties positioned by the speed indicator. At the control speed, an electro-magnet is energized to attach to the tape which in turn transfers movement of the speed indicator to a power unit to control a vehicle throttle.

3,704,418

TESTING OF SEMI-CONDUCTOR DEVICES

George Coffin, Streetly, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Aug. 11, 1970, Ser. No. 62,970
Claims priority, application Great Britain, Aug. 11, 1969, 40,006/69
Int. Cl. G01r *31/26, 15/12*
U.S. Cl. 324—158 F **1 Claim**

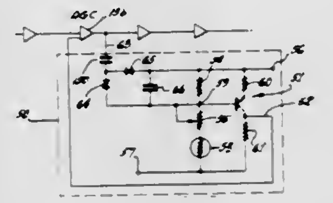


A method of testing a plurality of semi-conductor devices simultaneously in which the devices are placed in a testing station, at which point each device is tested and the information is stored in a memory unit, the devices then being moved to a control station, and while a second set of devices are being tested at the testing station, the memory unit operating so that an observer sees at the control station a spot of light for each faulty device, so that the faulty devices can be readily marked.

3,704,419

AUTOMATIC COMPENSATION OF CABLE TELEVISION SYSTEMS

William A. Rheinfelder, South Laguna, Calif., assignor to Anaconda Astrodata Co., Anaheim, Calif.
Continuation of Ser. No. 560,696, June 27, 1966, abandoned.
This application Jan. 14, 1971, Ser. No. 106,400
Int. Cl. H04b *1/06*
U.S. Cl. 325—308 **6 Claims**



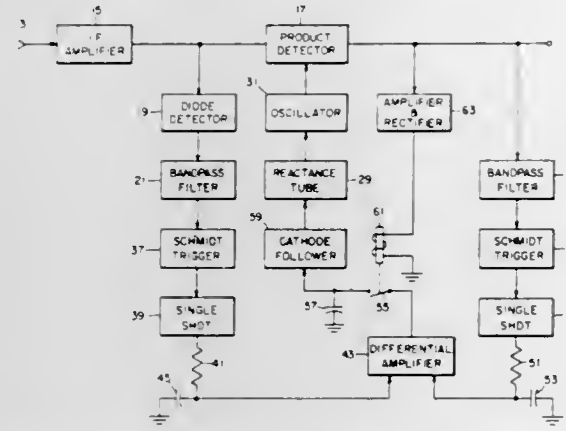
The invention concerns a cable television system wherein provision is made for effective automatic compensation for signal attenuation due to system temperature change, as for example in spaced AGC amplifiers.

3,704,420

AUTOMATIC FREQUENCY CONTROL FOR SUPPRESSED CARRIER RECEIVERS

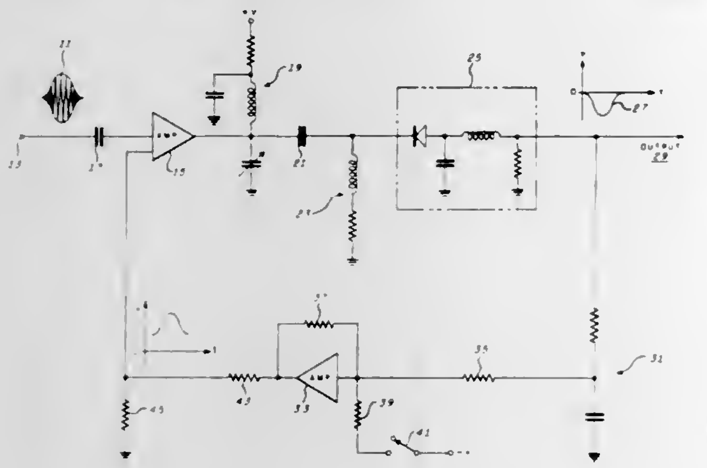
Oswald G. Villard, Jr., Woodside, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed July 20, 1970, Ser. No. 56,594
Int. Cl. H04b *1/68*
U.S. Cl. 325—329 **2 Claims**

An automatic frequency control circuit for receivers of suppressed carrier SSB voice signals. First, the incoming signals are rectified in a conventional AM diode detector. The audio output, for vowels and voiced sounds, will consist primarily of the fundamental and harmonics of the vocal cord vibrations. This harmonic spectrum is then compared with the analogous voice harmonics at the output of a product detector. If the compared voice harmonics are mismatched in audio frequency, then an error signal is generated which is used to adjust the frequency of the locally generated carrier signal which is injected into the product detector. Frequency adjustment will continue until the error signal approaches zero and there is no



voice harmonic frequency mismatch. One embodiment of the present invention employs a phase comparison of the voice harmonics and another embodiment employs a frequency comparison of the voice harmonics.

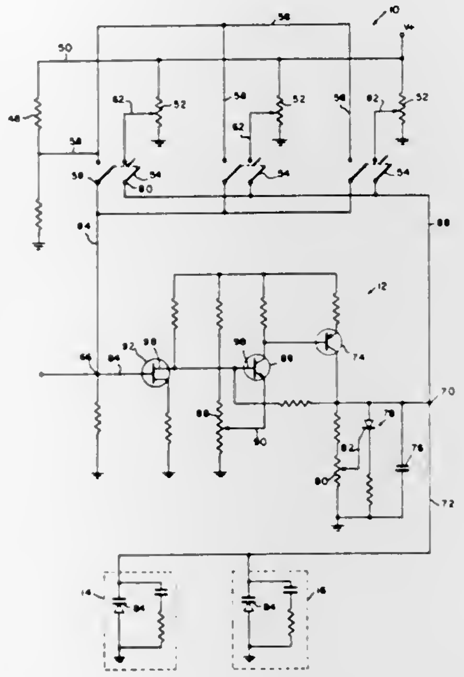
3,704,421
PULSE-TO-PULSE INSTANTANEOUS AUTOMATIC GAIN CONTROL CIRCUIT
Henry R. Blane, Charlottesville, Va., assignor to Sperry Rand Corporation
Filed Dec. 31, 1970, Ser. No. 103,083
Int. Cl. H04b *1/16*
U.S. Cl. 325—408 **5 Claims**



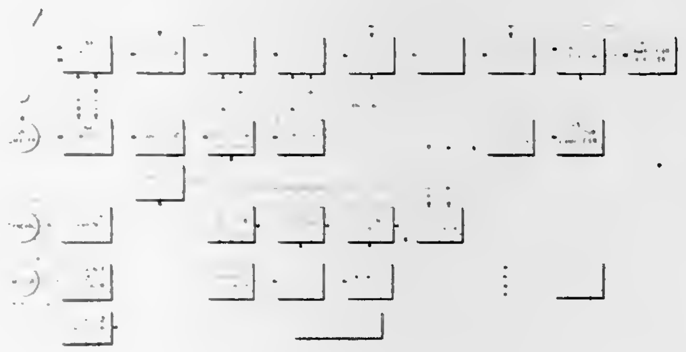
The output signal of an intermediate frequency amplifier is applied to a load through a video detector. An operational amplifier is arranged in a feedback loop so that the signal from the operational amplifier is used to control the gain of the intermediate frequency amplifier. A d.c. bias voltage is applied to the operational amplifier so that the gain control signal applied to the intermediate frequency amplifier represents the combination of the bias voltage and the instantaneous voltage from the video detector. The bias voltage is adjusted so that the intermediate frequency amplifier produces maximum gain so long as the voltage from the video detector remains below a specified value and reduced gain whenever the voltage from the detector exceeds the specified value.

3,704,422
FREQUENCY LOCK-IN PRESET TUNING SYSTEM
Roger B. Thomson, Columbus, Ind., assignor to Arvin Industries, Inc., Columbus, Ind.
Filed Dec. 18, 1970, Ser. No. 99,396
Int. Cl. H04b *1/16*
U.S. Cl. 325—422 **5 Claims**

A preset tuning system has a search tuning system with varactor tuning means coupled to its output. Switch means, when closed, connects the input of the search tuning means to a voltage source so as to apply to the input a voltage sufficient to hold the search tuning circuit in a state of equilibrium. The switch means, when closed, also connects a control voltage source to the varactor tuning means and to the output of the search tuning circuit which serves to coincidentally control the voltage on the output of the search tuning circuit and the varactor tuning means while the switch means is closed. When the switch means is then opened, the search tuning circuit will immediately lock on the center of the incoming signal, whereby the voltage on its output is maintained.

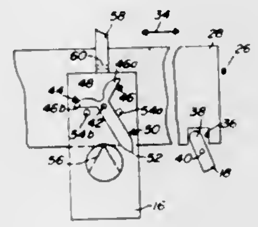


3,704,423
ADF WITH REMOTE DIGITAL TUNING
Stanley F. Kadron, Lighthouse Point; Gary L. Eisenhauser, Ft. Lauderdale; David J. Pryor, Ft. Lauderdale, and Raul J. Chacon, Ft. Lauderdale, all of Fla., assignors to The Bendix Corporation
Filed Nov. 23, 1970, Ser. No. 92,101
Int. Cl. H04b *1/16*
U.S. Cl. 325—458 **18 Claims**



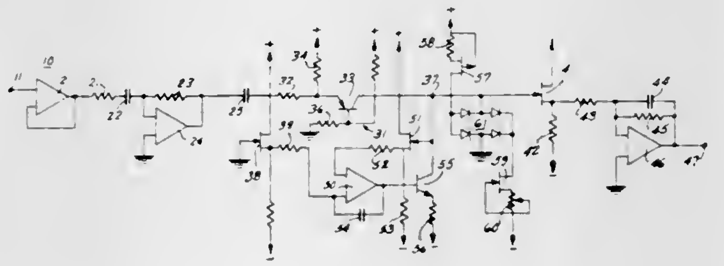
A remotely controlled digitally tuned receiver for automatic direction finders wherein a decimal frequency selector switch provides digitally coded signals controlling the tuning of the receiver. The selector switch may be located at a distance from the receiver and connected thereto by wires carrying the coded decimal signal. Logic circuits within the receiver respond to the coded decimal signals to effect bandswitching and to control the frequency of a synthesizer serving as a local oscillator. The synthesizer includes a voltage controlled oscillator, the control voltage of which also controls the tuning of resonant circuits selected by the bandswitch.

3,704,424
MULTI-BAND MEMORY ASSEMBLY
Jack C. Fiore, Chicago, and M. Richard Tennerstedt, Wilmette, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Aug. 19, 1971, Ser. No. 173,165
Int. Cl. H04b *1/16*
U.S. Cl. 325—470 **6 Claims**



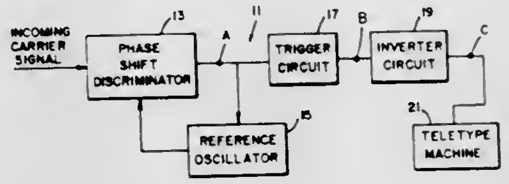
A waveband memory assembly in a dual band radio receiver includes a plurality of memory tabs mounted for pivotal movement on a slide plate; the latter being movable sidewise to two positions representing two radio waveband settings. Each memory tab is associated with a pushbutton selector, and includes a pair of wing-like projections extending outwardly from one end thereof and an elongated leg portion extending outwardly in the direction generally opposite thereto. Each of the memory tabs is pivotal to two positions representing the two waveband settings. Inward movement of the pushbutton moves a guide member depending therefrom into engagement with the elongated leg portion of a corresponding memory tab to move the slide plate to a position corresponding to that of the memory tab. Withdrawal of the pushbutton moves a finger-like projection on the pushbutton into engagement with the wing-like projections and ultimately into a recess therebetween. Subsequent thereto, the slide plate may be moved to a desired waveband setting. The memory tab is pivoted to the selected setting in accordance with the movement of the slide plate while the finger-like projection remains in the recess.

3,704,425
COMPRESSION/EXPANSION TECHNIQUES FOR TIME VARYING SIGNALS
Geoffrey T. Haigh, Lake Parsippany, N.J., assignor to Particle Data Inc., Elmhurst, Del.
Filed June 21, 1971, Ser. No. 154,800
Int. Cl. H03b *3/02*
U.S. Cl. 328—145 **7 Claims**



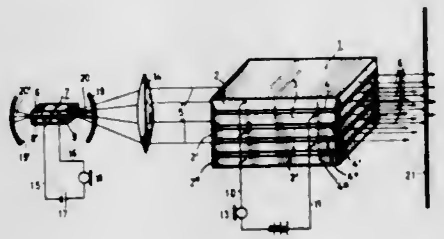
A signal translation circuit includes a buffer amplifier which feeds a differentiator to provide for a signal $f(t)$, the function $d\,f(t)$ to present to a bipolar AC log amplifier to change the waveform to log $[d\,f(t)/dt$. An integrator is then provided to restore the signal to its input waveform and at an amplitude which is the log of the amplitude of the original waveform.

3,704,426
PHASE LOCKED DETECTOR SYSTEM
William C. Smith, 67 Cuesta Vista Drive, Monterey, Calif., and James A. Rauth, 5172 Tripoli Avenue, Los Alamitos, Calif.
Filed March 22, 1971, Ser. No. 126,760
Int. Cl. H03d *3/24*
U.S. Cl. 329—122 **4 Claims**



A detector system for processing binary information contained in the carrier signal transmitted by the phase shift keying technique. The received carrier signal is applied to the input of a phase shift discriminator where it is compared with the output signal of a reference oscillator. The phase shift discriminator provides a D.C. output signal the level of which is dependent upon the out of phase relationship between the carrier signal and the reference signal. The reference oscillator is responsive to this D.C. signal and is initially frequency locked to the carrier signal and then phase locked to the carrier signal. The binary information is also contained in the level of the D.C. signal and is applied to a binary signal response device such as a teletype machine.

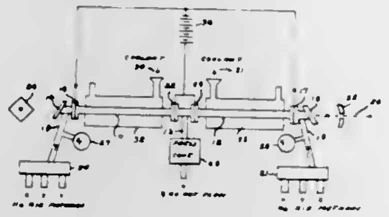
3,704,427
DEVICE FOR STIMULATING EMISSION OF RADIATION FROM A DIODE
Walter Heywang, Munich, Germany, assignor to Siemens & Halske Aktiengesellschaft, Berlin, Germany
Filed June 3, 1964, Ser. No. 372,199
Claims priority, application Germany, June 7, 1963, S 85580
Int. Cl. H01s *3/18*
U.S. Cl. 331—94.5 **23 Claims**



A device for stimulated emission of radiation utilizes a semiconductor body having a plurality of transition layers of i conductivity type parallel to each other and having opposite edges. When the body is electrically excited to stimulate radiation by charge-carrier in the layers and radiation is applied to one corresponding edge of the layers, amplified coherent tightly bunched beams are emitted by the transition layers at the other corresponding edge thereof.

3,704,428
CARBON MONOXIDE LASER FROM HELIUM-AIR-METHANE MIXTURE
James D. Barry, and William E. Boney, III, both of Fairborn, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force
Filed Oct. 4, 1971, Ser. No. 186,334
Int. Cl. H01s *3/22*
U.S. Cl. 331—94.5 **8 Claims**

A gas laser charged with a mixture of helium-air-methane, operable in both the Q-switched and CW mode, forms vibrationally excited CO molecules by the electric discharge induced chemical oxidation of methane. The resulting laser output provides at least 80 laser emission lines in the region from 4.7848 to 5.8532 microns, with 20 lines below 5 microns. Multiline pulse powers greater than two kilowatts may be obtained from the molecules formed by the electrochemical reaction. The lines result from $P(J)_{v,v'}$ vibration-rotational transitions in the formed CO with J ranging from 10 to 15 nominally and v,v' ranging from 2:1 to 16:15. Simultaneous lasing of both the formed CO and CO_2 molecules may be obtained by using two different temperatures of cooling (approximately −200°C for one portion of the tube and approximately −80°C for the remainder) of the laser tube to provide additional emission lines in the 9 to 13 micron range.



ERRATUM

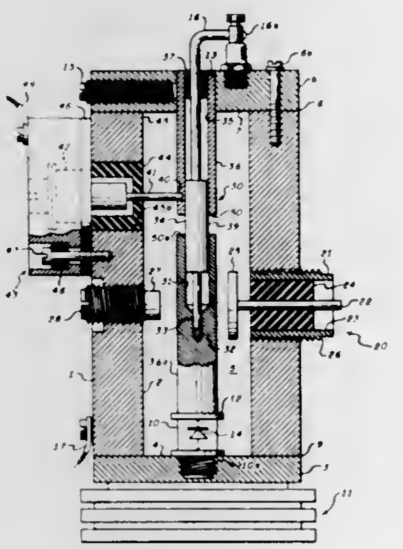
For Class 331—94.5 D see:
Patent No. 3,704,377

3,704,429

NEGATIVE RESISTANCE DIODE COAXIAL CAVITY OSCILLATOR WITH RESISTOR FOR SUPPRESSING UNDESIRED MODES

Bernard E. Sigmon, Tampa, Fla., assignor to Sperry Rand Corporation

Filed June 19, 1970, Ser. No. 49,439
Int. Cl. H03b *7/14;* **H03f** *3/10*
U.S. Cl. 331—101 4 Claims



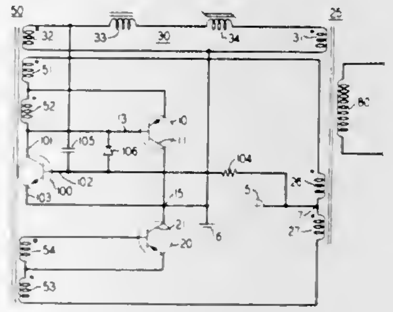
A negative resistance diode device is coupled to oscillating high frequency fields within a coaxial line cavity resonator for amplifying those electromagnetic fields. The combination forms a single port, high frequency amplifier or oscillator. A resistive device is coupled within the inner conductor of the coaxial resonator for supplying bias to the negative resistance diode device, for eliminating spurious modes of high frequency oscillation in the resonator, and for facilitating electronic tuning of the operating high frequency of the converter.

3,704,430

STARTING CIRCUIT FOR LOW VOLTAGE INVERTERS UTILIZING REGENERATIVE ACTION IN THE FEEDBACK TRANSFORMER OF THE INVERTER TO GENERATE STARTING SIGNALS

George Raymond Westerman, Denville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 23, 1971, Ser. No. 155,710
Int. Cl. H02m *7/52*
U.S. Cl. 331—113 A 1 Claim



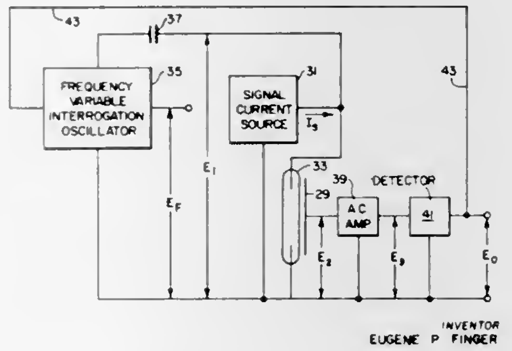
A starting circuit for a low input voltage current feedback type inverter utilizes regenerative action in the windings of its feedback transformer to drive a transistor in order to generate starting oscillatory signals. These starting oscillatory signals are utilized to drive one of the switching transistors of the inverter into a conduction state, whereupon inverter action is started. An inhibiting feedback arrangement inhibits the starting oscillatory signals after the inverter circuit starts to oscillate.

3,704,431

COULOMETER CONTROLLED VARIABLE FREQUENCY GENERATOR

Eugene P. Finger, Brewster, N.Y., assignor to Curtis Instruments, Inc., Mount Kisco, N.Y.

Filed July 21, 1971, Ser. No. 164,677
Int. Cl. H03b *3/00*
U.S. Cl. 331—177 R 6 Claims



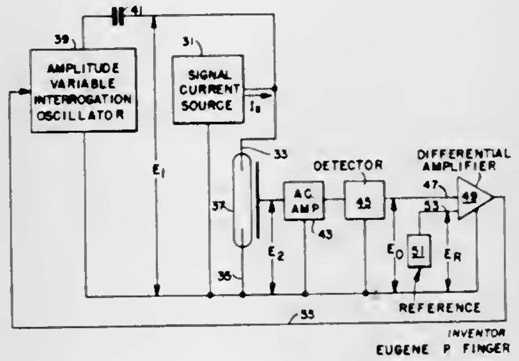
A variable frequency generator utilizing a coulometer for generating a signal having an amplitude that varies in accordance with the integral of a selected function. A DC current source and a variable frequency interrogation oscillator are connected to the input terminals of a coulometer which modulates the output of the oscillator in accordance with the integral of the current from the current source. The output of the coulometer is amplified by an AC amplifier and is then demodulated by a standard envelope detector. The demodulated signal is fed back to the oscillator to proportionally control the frequency of the oscillator, that is, as the amplitude of the modulated signal increases, the frequency of the oscillator increases and, as the amplitude of the demodulated signal decreases, the frequency of the oscillator decreases.

3,704,432

CAPACITIVE COULOMETER IMPROVEMENTS

Eugene P. Finger, Brewster, N.Y., assignor to Curtis Instruments, Inc., Mount Kisco, N.Y.

Filed July 21, 1971, Ser. No. 164,676
Int. Cl. H03b *3/02*
U.S. Cl. 331—183 7 Claims



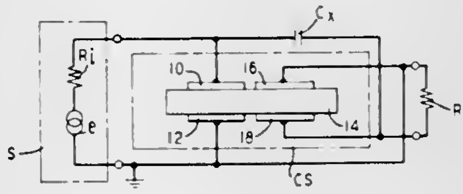
A generator utilizing a capacitive coulometer for generating a signal that is inversely proportional to the integral of a selected function. A current source and a variable amplitude interrogation oscillator are connected to the input terminals of a coulometer which modulates the output of the oscillator in accordance with the integral of the current from the current source. The modulated signal is amplified in an AC amplifier and demodulated by a standard envelope detector. The demodulated signal is compared with a reference signal in a differential amplifier which generates an error output signal when the demodulated signal is not equal to the reference signal. The error signal is fed back in a negative feedback path to adjust the amplitude of the variable amplitude interrogation oscillator.

3,704,433

BAND-ELIMINATION FILTER

Jedediah Lyman Garrison, Andover, and Andrew Nicholas Georgiades, Lowell, both of Mass., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 847,544, Aug. 5, 1969, abandoned. This application May 27, 1971, Ser. No. 147,681
Int. Cl. H03h *9/00*
U.S. Cl. 333—72 15 Claims



A band-elimination filter network is formed by a pair of crystal resonators each including a respective pair of electrodes sandwiching a common crystal wafer therebetween. The resonators are acoustically coupled through the common wafer and are connected externally by way of a reactive element having a magnitude within a critical range.

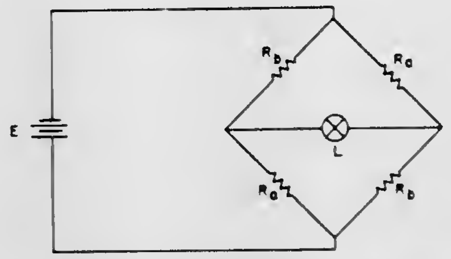
3,704,434

SKIN EFFECT RF BRIDGE FILTER

Donald A. Schlachter, 222 Braehead Drive, Fredericksburg, Va.

Filed April 20, 1971, Ser. No. 135,731
Int. Cl. H03h *7/10, 9/00*
U.S. Cl. 333—75 15 Claims

A filter in a bridge configuration having different types of iron coated conductors. The device excludes current from a load by utilizing the skin effect to attenuate RF energy. The bridge is unbalanced at low frequencies allowing low frequency energy and direct current to pass relatively unhindered.

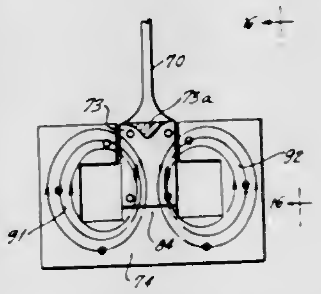


3,704,435

TRIPPING SYSTEM FOR CIRCUIT BREAKER

Frank W. Kussy, Haverford, and Gustave E. Heberlein, Jr., King of Prussia, both of Pa., assignors to I-T-E Imperial Corporation, Philadelphia, Pa.

Division of Ser. No. 145,175, May 20, 1971, Pat. No. 3,663,903. This application Dec. 20, 1971, Ser. No. 209,853
Int. Cl. H01h *3/32*
U.S. Cl. 335—255 3 Claims



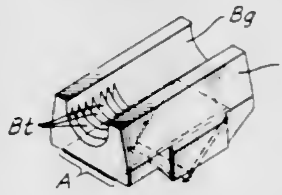
A current limiting circuit breaker is constructed to achieve more rapid tripping in the medium fault current range by utilizing a magnetic tripping device which imparts physical motion to the movable contact under particular fault current conditions. In the lowest fault current range above the thermal tripping range the magnetic tripping unit automatically operates or releases the spring operating mechanism thereby causing contact separation. As fault current increases the magnetic tripping means is effective to assist the operating mechanism to physically move the movable contact, and at still higher currents the magnetic tripping means moves the movable contact to its fully open position before any movement is imparted to the movable contact by the spring operating mechanism. As fault currents increase still further, electrodynamic forces assist the magnetic means to physically move the movable contacts, and in the very highest fault current range electrodynamic operation moves the movable contact essentially to its fully opened position, before the magnetic trip means for the operating mechanism is active in moving the movable contact.

3,704,436

MULTI-WIRE POTENTIOMETER CONTACT DEVICE

Ronald L. Froebe, and Howard H. Hatch, both of Riverside, Calif., assignors to Bourns, Inc., Riverside, Calif.

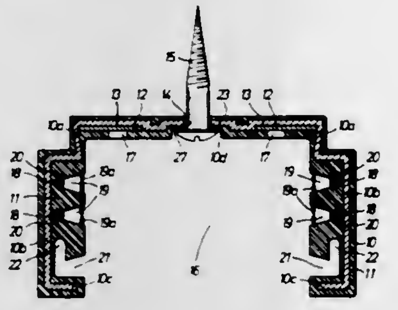
Filed Feb. 24, 1971, Ser. No. 118,246
Int. Cl. H01c *9/02*
U.S. Cl. 338—202 4 Claims



A contact device for potentiometers and method of producing the device, the device being devised and arranged to facilitate automatic manufacture thereof by a machine into which a strip-like sheet or array of fine-gauge wires is drawn in side-by-side relation under tension past stations at a first of which flat plates are bonded to the wires at locations at measured intervals apart to integrate the wires and plates into a unitary assembly and at a second of which stations an insulative body is molded around each of the plates in succession, and at a third of which stations the wires are severed adjacent one end of the body and are formed into a set or array of side-by-side cantilever contact fingers each offering lateral support to another thereof and each having a contact point disposed in a common straight line extending transversely of the fingers.

3,704,437
CURRENT DISTRIBUTOR RAIL

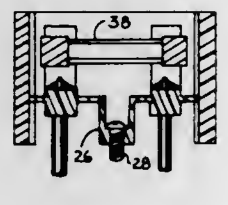
Kurt Hesse, Lemgo-Lippe, Germany, assignor to Staff & Schwarz G.m.b.H., Lemgo-Lippe, Germany
Filed Jan. 5, 1971, Ser. No. 104,104
Claims priority, application Germany, Jan. 7, 1970, A 126/70
Int. Cl. H01r *9/00*
U.S. Cl. 339—21 R **7 Claims**



A current distributor rail for supplying current to consuming devices, comprising a C-section metal base extending over the entire length of the rail and a plastic covering enclosing the metal base. A plurality of power conductors embedded in the plastic covering, with an access opening for each conductor defined by the covering and extending over the entire length of the rail. A least one ground conductor in contact with the metal base and accessible from the interior of the rail through recesses in the plastic covering, and two locating grooves extending over the entire length of the rail defined by the plastic covering and accessible from the interior of the rail. The locating grooves having clamping surfaces to receive an adaptor.

3,704,438
SCREWLESS TERMINAL FUSE BOX

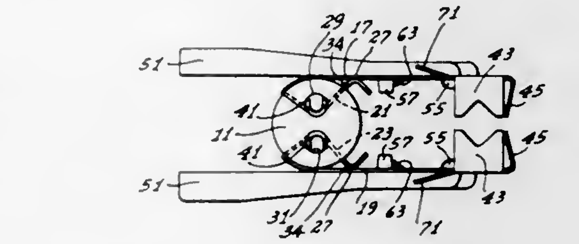
Christopher B. Boone, 926 Brunswick Court, Rockledge, Fla.
Division of Ser. No. 836,192, May 23, 1969, Pat. No. 3,555,481. This application Aug. 2, 1971, Ser. No. 168,070
Int. Cl. H01r *9/12*
U.S. Cl. 339—95 D **4 Claims**



A quick wiring modular fuse block, requiring no soldering crimping screws or special tools. The fuse block comprise a pair of wire and cartridge fuse holding clips, of springy material secured inwardly of the block. The clips are formed with wire grippers consisting of clinching tongues, die cut in the base of the clips. The base of the housing is formed with wireway bores aligned with the wire grippers for passing the wire ends therethrough.

3,704,439
TERMINAL CLIP

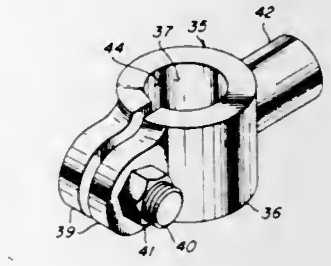
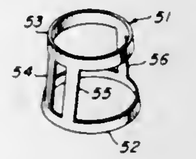
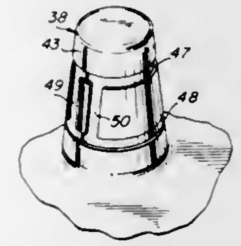
Arthur Nelson, 1069 Via Regina, Santa Barbara, Calif.
Filed Oct. 15, 1970, Ser. No. 81,088
Int. Cl. H01n *11/20*
U.S. Cl. 339—99 R **12 Claims**



A terminal clip for quick connection of an antenna lead to a receiver. A pair of jaws are mounted on a body and biased toward one another at their receiver-attachment ends by means of pre-stressed spring forces manufactured into the jaws in the areas in which they are attached to the body. An operating handle is attached to each jaw for opening them so that they can grip the receiver elements between them. Portions of the jaws within the body are provided with teeth whereby, when an antenna lead is threaded through the body, a screw means may be moved toward the teeth to fixedly embed the conductors thereon.

3,704,440
CORROSION RESISTANT BATTERY TERMINAL CONNECTOR

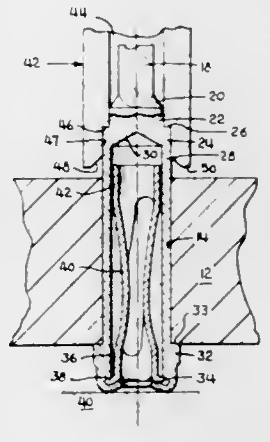
Curtis E. Bradley, 4517 Calle Ventura, Phoenix, Ariz.
Continuation-in-part of Ser. No. 47,384, June 18, 1970, abandoned. This application Dec. 2, 1970, Ser. No. 94,286
Int. Cl. H01r *11/26*
U.S. Cl. 339—114 **5 Claims**

A corrosion resistant battery terminal connector for attaching an electrical conductor cable to a terminal post in an electric storage battery. An elastomeric material sealingly engaged between the outside surface of the battery terminal post and the bore of the cable terminal is used to define corrosion resistant areas by electrical contact which are protected from corrosion by air and moisture. One embodiment employs a circular cable terminal having inwardly projecting battery post contacting flanges enclosed by a gasket or elastomeric material. An alternate embodiment employs a conventional cable terminal and a battery terminal post having recesses to receive the elastomeric gasket. A fastener fits around the battery post and cable terminal. The fastener has two rings which are slightly larger than the terminal post. The rings are connected to each other and the top and bottom ring is elastically fixed to an angle so as to eliptically engage the terminal connector to the post. A second connecting piece joined only at the bottom ring extends upwardly. The second connecting piece serves to pull the bottom ring into a perpendicular position relative the battery post relieving the pressure of the eliptical contact of the ring with the post. The connector apparatus can then be easily removed. The rings also serve the purpose of compressing the elastomeric material in the first embodiment thereof thus providing a firmer seal.

3,704,441
PANEL MOUNTED ELECTRICAL TERMINAL

Frank Irvin Douglass, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Continuation of Ser. No. 756,809, Sept. 3, 1968, abandoned. This application Aug. 3, 1970, Ser. No. 64,139
Int. Cl. H01r *9/08*
U.S. Cl. 339—220 T **4 Claims**

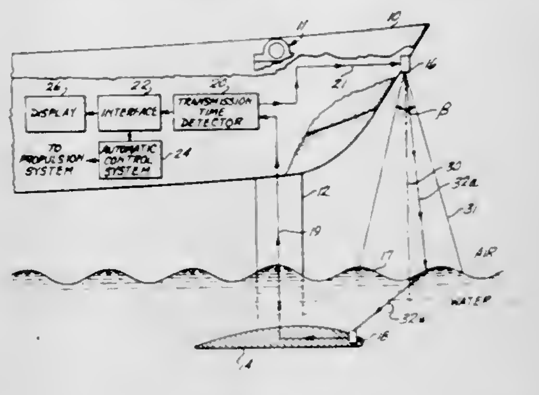


A method and article for mounting electrical contacts in a panel is disclosed which features a headed metal tubular element carrying a spring contact adapted to be inserted in an aperture of a panel. The tubular portion of the element is dimensioned to be symmetrically compressed longitudinally by tooling to develop an outward annular bulge capable of locking the element tightly into panels of different thicknesses. Bulging of the contact element is controlled to permit large numbers of contacts to be mounted in a plastic panel without causing panel growth and incident misalignment of elements. The tubular element is of a configuration to assure adequate deformation without damage to a preassembled spring contact carried therewithin.

3,704,442
HEIGHT SENSOR FOR HYDROFOIL WATERCRAFT

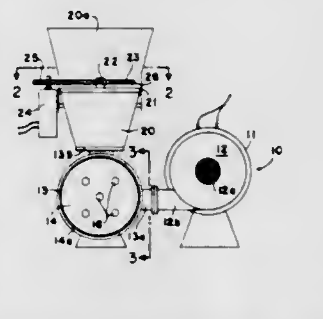
Charles P. Wright, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed April 20, 1970, Ser. No. 30,049
Int. Cl. G01s *9/68*
U.S. Cl. 340—1 L **9 Claims**

A method for detecting the relative position of a gaseous-liquid interface with respect to a datum point and an apparatus embodying the same for use in hydrofoil height sensors. A transmitter situated on the watercraft's hull directs an ultrasonic signal at the water surface. A portion of that signal is transmitted through the surface and refracted thereby to an ultrasonic receiver preferably situated on the hydrofoil. Evaluation of the transmission time of the ultrasonic signal from the transmitter to the receiver yields significant information concerning the relative position of the water surface with respect to either the hull or the hydrofoil. Factors for successful implementation of this technique are discussed in detail, and reference is made to a specific embodiment of a detector for transmission times.



3,704,443
HYDRODYNAMIC TRANSDUCER

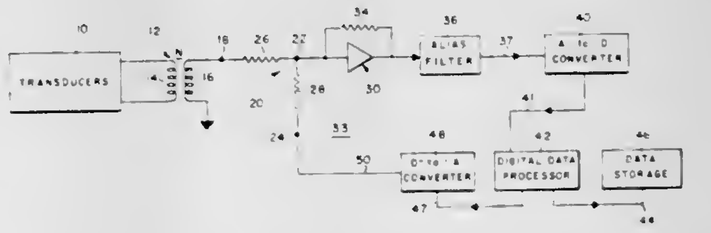
Edgar N. Rosenberg, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed Aug. 27, 1970, Ser. No. 67,460
Int. Cl. G01v *1/00;* **H04b** *13/00*
U.S. Cl. 340—8 R **2 Claims**



A motor pump impels a substantial volume of water through a rotatable, slotted shutter to modulate the flow of impelled water. A pair of oppositely facing, radiating-piston surfaces is reciprocably displaced in response to the modulated flow to project acoustic energy through a water media. The transducer, by being freely flooded, in independent of changing pressures in the surrounding media and does not require elaborate sealing assemblies, making it ideal for operation at extreme depths. Varying the configuration of the shutter, interconnecting conduits, and varying the angular speed of the shutter afford selective broadband operation, and increasing the flow rate provides a greatly increased power output.

3,704,444
SEISMIC DATA PROCESSING METHOD AND SYSTEM

Arthur N. Schmitt, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.
Filed June 1, 1970, Ser. No. 42,347
Int. Cl. G01v *1/24, 1/30*
U.S. Cl. 340—15.5 DP **8 Claims**



In a digital seismic data processing system the reflected seismic signals are received in analog form. An analog-to-digital converter samples or measures at equal time intervals the analog signals and converts the sampled signals into a sequence of digital numbers. By the process of digital filtering, arithmetic operations are then used to multiply consecutive values of the digital numbers by a prescribed set of numbers and to add the resulting products together. This invention contemplates also using the process of digital filtering to produce a digital feedback signal which is converted into an analog feedback signal. The analog feedback signal is combined in real time with the arriving, noise-containing, analog seismic signal to substantially completely remove the noise from the arriving raw signal prior to processing it through the seismic data processing system.

3,704,445

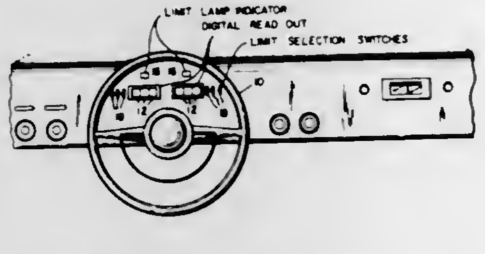
DIGITAL READ OUT INDICATOR FOR VEHICLES

Richard R. Lanham, 904 Middleborough Road, Baltimore, Md.

Filed July 20, 1971, Ser. No. 164,294

Int. Cl. G08b *21/00;* **B60q** *1/54*

U.S. Cl. 340—62 **5 Claims**



Apparatus disposed in a vehicle for providing a digital read out indicator for displaying vehicular speed or engine revolutions comprising a mechanical shaft rotated at a speed corresponding to the vehicular speed or engine revolutions, means responsive to the shaft rotation to produce an electrical pulse train at a recurrence frequency proportional to the shaft rotational speed, and digital display means responsive to said pulse train to produce the desired display.

3,704,446

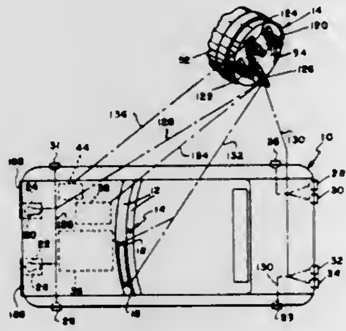
RUNNING LIGHTS AND DIFFERENTIAL PARKING SYSTEMS FOR VEHICLES

Vincent J. Walter, 1557 Woodland Avenue, Wichita, Kans.

Filed Feb. 9, 1970, Ser. No. 9,838

Int. Cl. B60q *1/26*

U.S. Cl. 340—74 **28 Claims**



A system and alternate companion systems for visually signaling pedestrians and other motorists that the electrical ignition apparatus of the motor of a vehicle is electrically energized, whereby such persons may be apprised in the interest of safety, whether or not a condition exists that is essential to motor operation. The system entails visual signaling lamps directed outwardly from all sides of the vehicle that are in electrical parallel with the electrical ignition apparatus, voltage regulator or alternator, so as to be concurrently energized therewith. The system optionally includes means for interrupting energization of the electrical ignition apparatus and the lamps immediately prior to and after rotating the motor for starting purposes, such means preferably being incorporated in a conventional multipurpose so-called "ignition switch" and operative to burnish an electrical contact of the latter during an actuating movement thereof.

3,704,447

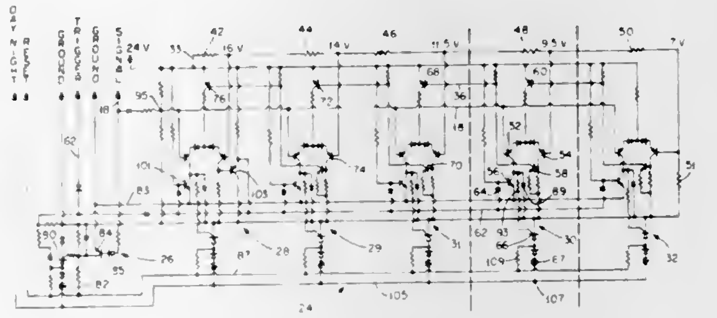
REMOTE TO CENTRAL MONITORING SYSTEM UTILIZING AMPLITUDE CODING OF SIGNALS

Charles T. Reader, 402 Ivystone Lane, Moorestown, N.J., and John F Renz, 146 Harding Avenue, Cinnaminson, N.J.

Filed March 1, 1971, Ser. No. 119,486

Int. Cl. G08b *25/00;* **H04q** *5/14*

U.S. Cl. 340—172 **15 Claims**



A monitoring system includes a plurality of sensing stations for sensing and transmitting signals representing abnormal conditions to a central station through a single channel or line. The central station includes a plurality of detectors responsive to receive signals from the sensing stations and to identify one or more of the stations transmitting the signals.

3,704,448

DATA PROCESSING CONTROL SYSTEM

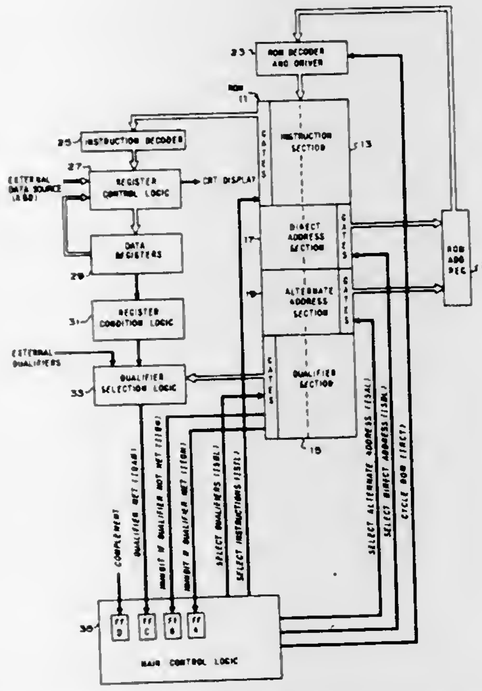
Thomas E. Osborne, San Francisco, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 769,034, Oct. 21, 1968, abandoned.

This application Aug. 2, 1971, Ser. No. 168,472

Int. Cl. G06f *9/20, 13/08;* **G05b** *13/02*

U.S. Cl. 340—172.5 **7 Claims**



A read-only memory includes an instruction section, an address section, and a qualifier section, all of which are addressed simultaneously by a single memory address code and thereafter selectively enabled. A plurality of instructions from the instruction section simultaneously operate on data contained in different storage registers. Qualifier logic compares the data in the storage registers with predetermined conditions addressed in the qualifier section. Different control codes are produced by the qualifier logic and qualifier section of the memory. Main control logic responds to the control codes and gates signals from the instruction and address sections. Instructions from the instruction section may be selectively inhibited.

3,704,449

APPARATUS FOR MEASURING AND INDICATING THE ANGULAR POSITION OF AN ANTENNA

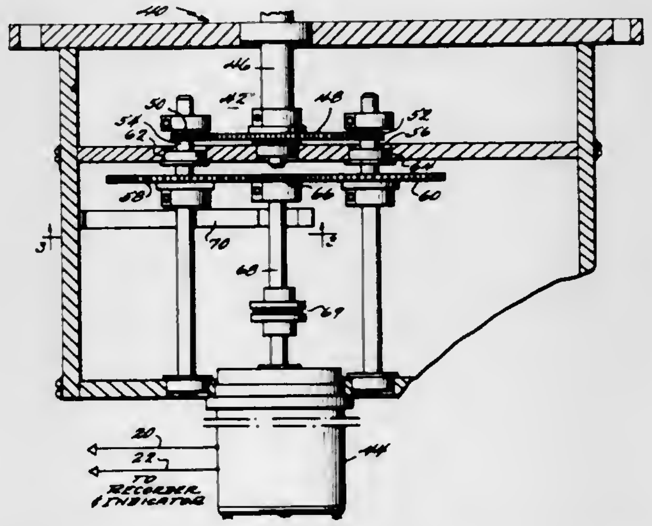
Samuel F. Hutchins, 1744 Rosalind Dr. N.E., Atlanta, Ga.

Continuation of Ser. No. 649,537, June 28, 1967, abandoned.

This application Aug. 17, 1970, Ser. No. 64,605

Int. Cl. F16h *57/00;* **G08c** *19/00*

U.S. Cl. 340—198 **6 Claims**



An antenna position measuring and indicating system is disclosed wherein the angular position of the antenna is mechanically amplified by a special gear arrangement in order to increase the resolution of the angular indication and to decrease the electrical error of a synchro transmitter. The synchro converts the amplified mechanical indication to an electrical position signal which is transmitted to position indicating apparatus.

The gear arrangement steps up or amplifies the angular position of the antenna — that is, for each revolution of the shaft connected to the antenna, the shaft connected to the synchro transmitter undergoes a plurality of revolutions. A first gear is attached to the shaft connected to the antenna and another gear is attached to the shaft connected to the synchro. Two intermediate shafts with gears at both ends of each shaft are also provided. The last-mentioned gears mesh with opposite sides of the gears associated with the antenna and synchro. Thus, any eccentricity of the gear associated with the antenna is averaged out so that the angular position of the shaft connected to the synchro is an accurate amplification of the true angular position of the shaft connected to the antenna. Hence, the combined mechanical error (due to the gear arrangement) and electrical error (due to the synchro) is substantially minimized.

3,704,450

SEISMIC TRACE CENTER-LINE GENERATOR

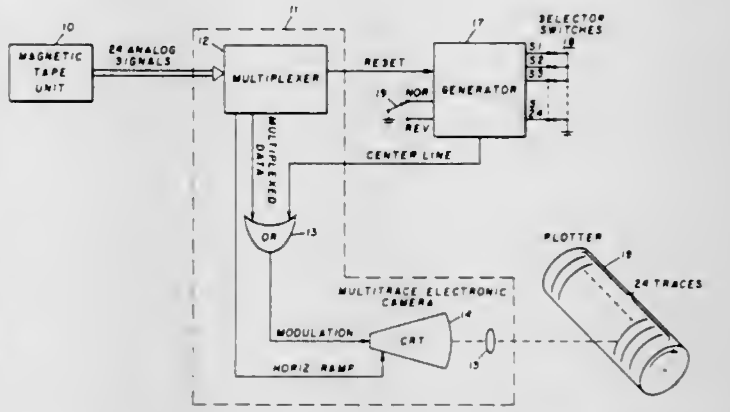
Clarence G. Smith, Irving, Tex., assignor to Mobil Oil Corporation

Filed July 26, 1971, Ser. No. 166,167

Int. Cl. G06f *3/14*

U.S. Cl. 340—172.5 **5 Claims**

Multiplexed seismic data representing a plurality of seismic channels intensity modulates each sweep of the electron beam on a cathode-ray tube. Each successive sweep of the electron beam is photographically reproduced on a rotating drum plotter to provide a plurality of seismic traces. A multiposition selector switch is provided to select traces to be marked with a center line through the entire length of the trace as it is recorded on the drum plotter. A generator provides center-line pulses for the selected traces to intensity modulate the electron beam of the cathode-ray tube in time coincidence with the intensity modulation of the electron beam by the multiplexed seismic data for the selected traces. A two-position switch is provided to permit the generator to reverse the order in which the traces are marked with a center line.



3,704,451

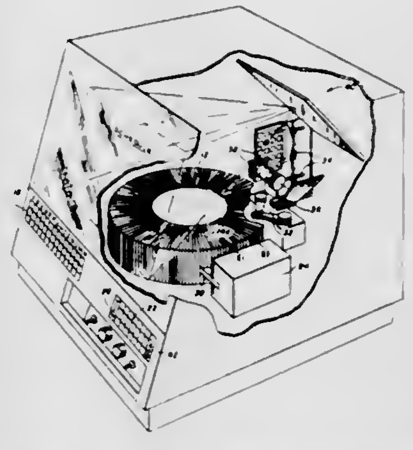
AUTOMATIC DATA RETRIEVAL AND DISPLAY SYSTEM

Samuel Reader Pearson, Farmers Branch, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 5, 1971, Ser. No. 104,038

Int. Cl. G11b *13/00*

U.S. Cl. 340—172.5 **7 Claims**



An automatic data retrieval and display system is disclosed wherein solid state logic, motor drives and solenoid drives are utilized. Logic and drive circuitry control operation of a rotary file to rapidly select a desired data item from the file and accurately position it for display. Transistorized d.c. isolator circuit means isolate logic signals from a.c. drive power while servo positioning circuits effect positioning of the data item for display with maximum speed. A timing circuit provides a reset signal after a programmable delay.

3,704,452

SHIFT REGISTER STORAGE UNIT

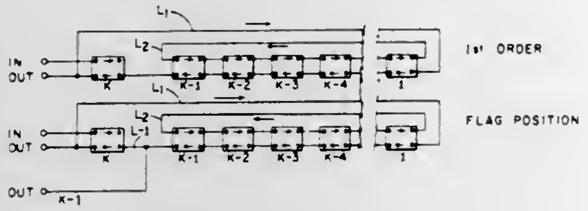
William F. Beausoleil, Poughkeepsie; David T. Brown, Wappingers Falls, both of N.Y., and William A. Clark, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1970, Ser. No. 103,201

Int. Cl. G06f *9/20;* **H03k** *5/00*

U.S. Cl. 340—172.5 **11 Claims**

A data storage unit is provided in which groups or "pages" of data including their addresses are stored in shift registers in successive positions, the registers being operable on a signal requesting access to shift their contents repetitively to the next position in one or more loops which include a position wherein a page may be accessed and in one or more loops which excludes said access position. Controls are provided for varying the shifting in said loops such that the positions of some or all of the pages of separately accessed classes are dynamically reordered so that they are presented to said access position on such signal in approximately or exactly the order in which they were last requested, thus reducing average access time in programs involving considerable repeated reference to a limited group of pages of the class.



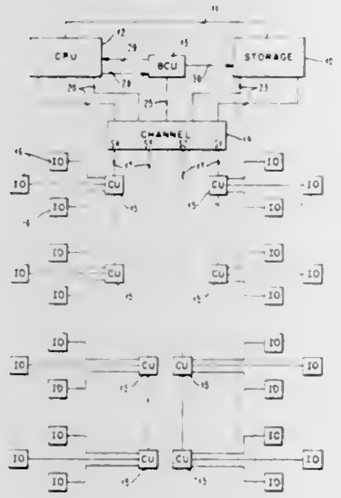
3,704,453
CATENATED FILES

Wayne Waldo Blackwell, Rockville; John Goodell Earle; John Joseph O'Connell, both of Gaithersburg; Edwin Bruce Pierce, Damascus, and John Edward Shabe, Darnestown, all of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 23, 1971, Ser. No. 117,985

Int. Cl. G06f *7/06*

U.S. Cl. 340—172.5 **8 Claims**



This invention concerns a peripheral control apparatus or channel which controls the transfer of data between input/output devices and a main memory of a data processing system. The channel performs input/output operations when instructed to do so by the data processing system by obtaining control words from a main storage. A plurality of subchannels share a common control section wherein means are provided to selectively combine a plurality of the input/output devices connected to the channel to appear as a single device to the user. This is accomplished by the generation of a plurality of control words from the single control word obtained from main memory and the distribution of logical records of a data set among the plurality of files.

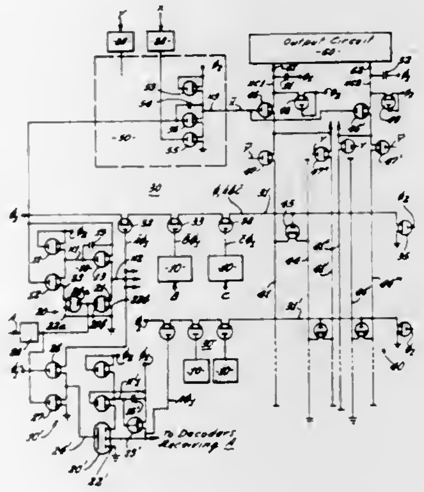
3,704,454
ACCESSING SYSTEM FOR AND IN INTEGRATED CIRCUIT TYPE MEMORIES

Michael R. McCoy, San Jose, and Terry R. Walther, Sunnyvale, both of Calif., assignors to Electronic Arrays, Inc., Mountain View, Calif.

Filed May 18, 1970, Ser. No. 38,104

Int. Cl. G11c *11/34*

U.S. Cl. 340—173 SP **14 Claims**



A read-only memory as MOS device is disclosed, operating with a two phase clock, decoder and decoder drivers using minimum size components. The memory cells are arranged on intersections of gate platings-conductive zone columns. The gate platings are driven by serial connected decoders during one phase, and discharged in the other phase during which column nodes are charged, selectively discharged during first phases in dependence upon further decoder circuitry.

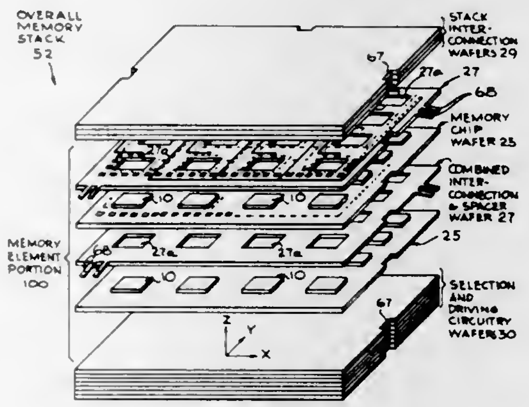
3,704,455
3D-COAXIAL MEMORY CONSTRUCTION AND METHOD OF MAKING

Alfred D. Scarbrough, 9912 Tunney Avenue, Northridge, Calif.

Filed Feb. 1, 1971, Ser. No. 111,476

Int. Cl. G11c *17/00*

U.S. Cl. 340—173 SP **13 Claims**


OVERALL MEMORY STACK 52
STACK INTER-CONNECTION WAFERS 29
27
68
MEMORY CHIP WAFER 25
COMBINED INTER-CONNECTION & SPACER WAFER 27
25
MEMORY ELEMENT PORTION 100
SELECTION AND DRIVING CIRCUITRY WAFER 30
Z
Y
X

A semiconductor memory in which integrated circuit chips each containing semiconductor flip-flop memory elements are mounted to respective ones of a plurality of batch-fabricated, pressure-stacked electrically conductive wafers so as to form a compact, essentially all metal, three-dimensional memory structure. Coaxially-shielded X, Y and Z conductors are formed in the conductive wafers ny selective chemical etching for expeditiously providing the interconnections required for the integrated circuit chips in accordance with the desired memory organization.

3,704,456
ASSOCIATIVE STORAGE ELEMENT

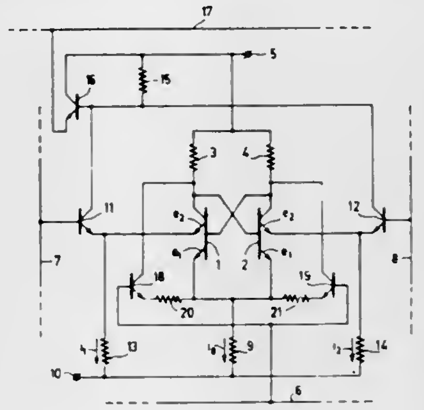
John Barry Hughes, Brighton, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 19, 1971, Ser. No. 190,556

Claims priority, application Netherlands, Oct. 22, 1970, 7015435

Int. Cl. G11c *15/00, 7/00, 11/40*

U.S. Cl. 340—173 AM **1 Claim**



The invention provides an associative flip-flop storage element which does not go into stauration, thereby providing a fast switching rate with comparatively low voltage variations across the drive conductors for carrying out write and comparison processes.

3,704,457
DRIVING TECHNIQUE FOR THIN FILM MEMORY ELEMENTS

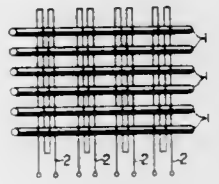
Hisao Maeda, deceased, late of Tokyo-to, Japan (by Hisaaki Maeda, heir); Takashi Sakuma, and Keisuke Kobayashi, both of Tokyo-to, Japan, assignors to Toko Kabushiki Kaisha, Tokyo-to, Japan

Continuation-in-part of Ser. No. 614,667, Feb. 8, 1967, abandoned. This application Jan. 19, 1970, Ser. No. 3,601

Claims priority, application Japan, Feb. 11, 1966, 41/8132

Int. Cl. G11c *11/04, 11/14*

U.S. Cl. 340—174 PW **12 Claims**



A method of driving a memory device having a matrix memory consisting of information wires provided respectively with magnetic thin film and to be applied with information pulse currents and word conductor wires crossing perpendicularly with said information wires and to be applied with word pulse currents; in which both of writing-in of informations "1" and "0" are carried out, respectively, by first and second bipolar information pulse currents which are different in only their polarities.

3,704,458
COMBINATION TRANSMISSION FLUID MONITOR AND FILTER

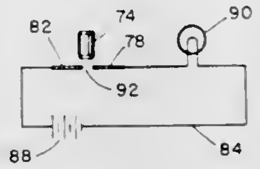
Wilbert Bernard Buchanan, Paulsboro, and Leon Haws, Wrightstown, both of N.J., assignors to Lorenzo Marini, Burlington, N.J., by said Buchanan and Haws

Filed Jan. 29, 1971, Ser. No. 110,994

Int. Cl. G08b *21/00*

U.S. Cl. 340—239 F **1 Claim**

A combination transmission fluid monitor and filter installable on the transmission fluid cooler outlet line and including a replaceable filter contained within a body. A normally open, pressure responsive switch installs in a fitting communicating with the interior of the filter body and is provided with means to automatically close the switch upon sensing the presence of low transmission fluid pressure.



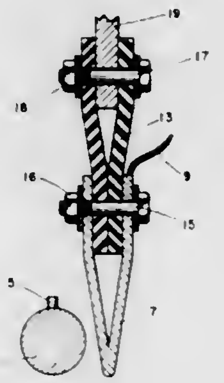
3,704,459
SEED PLANTER-FAILURE DETECTOR

Walter A. Young, Route 1, Pine Street, Creston, Ohio

Filed Oct. 4, 1971, Ser. No. 186,045

Int. Cl. G08b *21/00*

U.S. Cl. 340—271 **4 Claims**



A detector system for a seed planting machine of the type typically pulled behind a motorized tractor, and having a plurality of rotatable shafts connected by shear pins to a main drive shaft, is provided to detect when one or more of the rotatable shafts stops rotating during the machine's operation. An indicator panel is provided with light bulbs wired in parallel to one side of the tractors battery. Each of the bulbs is connected to a contact arm held in a position adjacent to a rotatable shaft. A pin is provided in each rotatable shaft to contact the contact arm intermittently upon rotation of the shaft. The rotatable shafts are grounded to the frame of the seed planting machine and to the frame of the tractor. The other side of the battery also is grounded to the frame of the tractor. Thus as each rotating shaft causes the pin therein to make contact with the contact arm an electrical circuit is completed and the indicator bulb wired to that contact arm lights up. Thus, when the seed planting machine is in operation, failure of an indicator light to intermittently blink "on" and "off" indicates that one of the rotating shafts has stopped rotating because of breakage of the shear pin connection.

3,704,460
SELF-CONTAINED ALARM LOCK WITH TAMPER-PROOF INTERLOCKED CASING FORMED FROM EXTRUSION

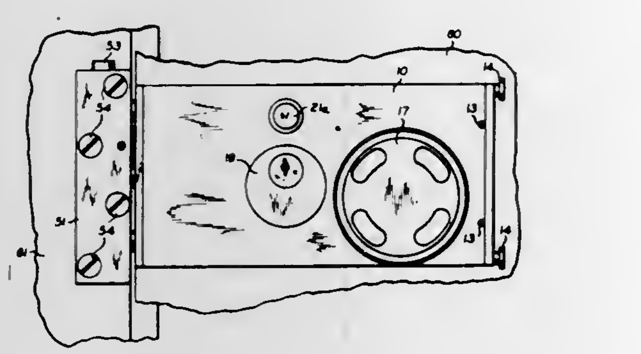
Stanley William Frank, 24 Clinton Street, Brooklyn, N.Y.

Continuation-in-part of Ser. No. 676,804, Oct. 20, 1967, abandoned. This application Aug. 18, 1970, Ser. No. 64,715

Int. Cl. G08b *13/08*

U.S. Cl. 340—274 **7 Claims**

An integral self-contained, key-operated alarm lock, the major portion of the casing for which can be made from two longitudinally slidably tongued-groove interlocking channel extrusions, has an electronic alarm circuit composed of a finger on-off switch, a striker proximity switch, a bolt position switch and a latching switch which holds the alarm on when it has been activated, until properly shut off.



3,704,461

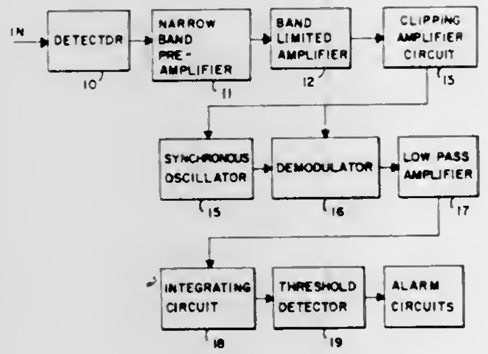
INTRUSION DETECTION SYSTEM RESPONSIVE TO INTERRUPTION OF A TRANSMITTED BEAM

Edward A. Rose, San Jose; Richard H. Krohn, Fremont, and Donald E. Slater, San Jose, all of Calif., assignors to Optronix, Inc., Santa Clara, Calif.

Filed March 25, 1970, Ser. No. 22,183

Int. Cl. G08b *13/18*

U.S. Cl. 340—258 B **8 Claims**



An infrared intruder detection system operable under severe weather conditions including fog, rain and snow over great distances exceeding 500 feet in the severest weather comprises a pulsed infrared transmitter and a self-contained spaced apart self-synchronized infrared receiver. Upon interruption of the transmitted beam for a predetermined period, the receiver generates an alarm in response to the remaining ever present signals due to ambient light and thermal instrument noise. When the beam is not interrupted, a local synchronous oscillator will track the incoming signal pulses. In the presence of an intruder, the pulsed beam is no longer received and the oscillator is unable to track the resulting amplified noise signal which arises from ambient light and thermal instrument noise. This results in the generation of an error signal at the output of the demodulator to which the oscillator is coupled. By the inclusion of appropriate bandpass amplifiers, filters and integrating circuits set to respond to predetermined thresholds coupled to the output of the demodulator, the receiver is able to discriminate between an intruder and such momentary interrupts as are caused by birds, falling leaves and blowing bits of paper which otherwise might cause false alarms.

3,704,462

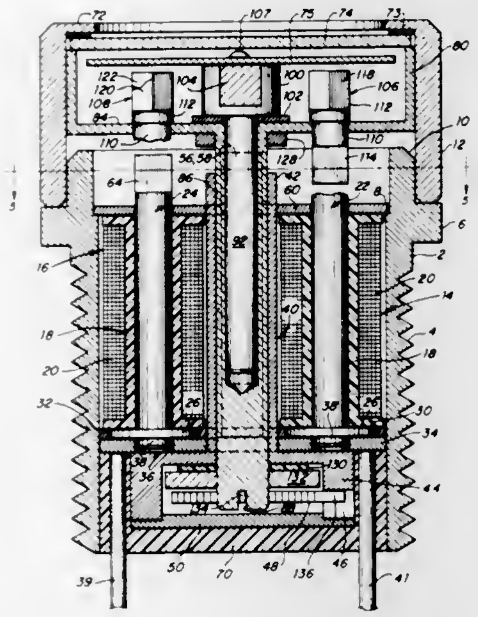
MANUALLY RESETTABLE ELECTROMAGNETIC INDICATORS

George E. Pihl, Abington, Mass., assignor to Miniature Electronic Components Corp., Holbrook, Mass.

Filed Sept. 21, 1970, Ser. No. 73,715

Int. Cl. G08b *5/22*

U.S. Cl. 340—373 **24 Claims**



A manually resettable electromagnetic flag indicator capable of binary indication comprising a sealed electromagnet sub-assembly and a display sub-assembly coupled together so that a pulse input to the electromagnet sub-assembly will cause the display sub-assembly to be operated to provide a first predetermined indication. The two sub-assemblies are coupled so that manual rotation of a portion of the display sub-assembly relative to the electromagnet sub-assembly will cause a second predetermined indication to be displayed.

3,704,463

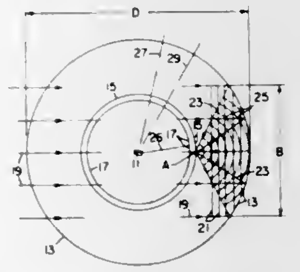
DIRECTION FINDING ANTENNA SYSTEM

George H. Barry, Saratoga, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed June 2, 1970, Ser. No. 42,640

Int. Cl. G01s *3/74*

U.S. Cl. 343—100 R **7 Claims**



A direction finding antenna system having a large circle of active reflector antenna elements and a smaller concentric circle of focal point active antenna elements. The outer circle consists of several hundred antenna elements where each element comprises a horizontal one-half wave length horizontal dipole and a one-fourth wave length vertical dipole. The horizontal dipole receives the incoming signal the output of which is amplified and applied to the input of the vertical dipole which then retransmits the signal. A group of reflector antenna elements forming a segment of the outer circle receive and retransmit the incoming signal to a focal point where the signal is received by a focal point antenna on the inner circle. The signal from the focal point antenna receiving the retransmitted signal thus represents the output of a directional antenna. A display of signal arrival direction is obtained from the output of the focal point antennas.

3,704,464

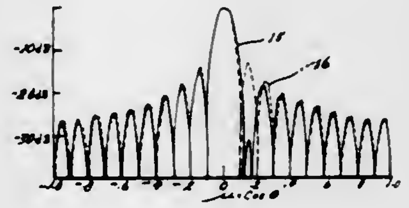
METHOD OF SUPPRESSING SELECTED ANTENNA RADIATION PATTERN SIDE LOBES WHILE RETAINING MAXIMUM DIRECTIVE GAIN

Charles J. Drane, Jr., Cambridge; John F. McIlvenna, Jr., Lynn, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force

Filed Nov. 10, 1970, Ser. No. 88,355

Int. Cl. H01 *3/26*; **H01q** *3/26*

U.S. Cl. 343—100 LE **1 Claim**



A method for maximizing aerial directive gain while simultaneously placing nulls (suppressing side lobes) in the far-field radiation pattern of the array. The expressions of the standard antenna gain equation that define the side lobes to be eliminated are equated to zero and solved for current phase and amplitude values. A new set of current values for the standard directive gain equation are derived through a transform operator that includes the derived phase and amplitude values. Techniques substantially identical are used to maximize a standard gain equation utilizing the new set of current values. The current phase and amplitude values derived from the maximization step are used to feed the antenna.

3,704,465

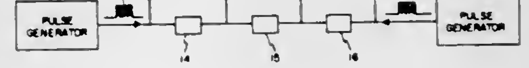
ANGULAR POSITION DETERMINING SYSTEM COMPENSATED FOR DOPPLER

Raymond J. Masak, and Herbert F. Baurle, both of East Northport, N.Y., assignors to Hazeltine Corporation

Filed Aug. 28, 1970, Ser. No. 67,820

Int. Cl. G01s *1/02*

U.S. Cl. 343—102 **14 Claims**



Disclosed are systems for determining the true angular position of a target with respect to a reference location. One such system employs a novel array of antenna units at the reference location. The units are uniquely excited by a pulse type signal in two opposite predetermined sequences to produce a pair of radiated pulse trains. A target located in the field of this array is illuminated by these radiated pulse trains each of which has a phase distribution proportional to the angular position of the target with respect to the array and opposite in sense to that of the other. Furthermore, the frequency of each pulse train undergoes a doppler shift due to the radial velocity, if any, of the target with respect to the array and therefore the ambiguity due to such shifts can be compensated for by detecting the phase distribution of each pulse train and processing the information obtained. In this manner an indication of the target's true angular position, free from doppler ambiguities, can be provided either at the reference location alone, the target alone, or at both the reference location and the target.

3,704,466

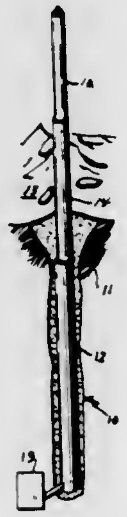
SURVIVABLE TELESCOPING ANTENNA

Robert D. Coyer, Renton, Wash., and Robert M. Weigel, deceased, late of Seattle, Wash. (by Virginia Weigel, heiress), assignors to The United States of America as represented by the Secretary of the Air Force

Filed April 22, 1971, Ser. No. 136,461

Int. Cl. H01q *1/04*

U.S. Cl. 343—719 **7 Claims**



A survivable telescoping antenna having an outer housing and a plurality of elements nested therein. A radiator is mounted on the innermost element. When the elements are in a retracted position within the outer casing, the radiator is protected from severe environmental conditions by a closure element. Upon activation of a power source, the elements are erected from the outer casing causing ejection of the closure element and exposing the radiator for operation thereof. This antenna is thereby capable of surviving extreme environmental conditions and yet providing a reliable operation when in use.

3,704,467

REVERSIBLE RECORD AND STORAGE MEDIUM

Brian G. Frock, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Sept. 14, 1970, Ser. No. 72,234

Int. Cl. G01d *15/34*

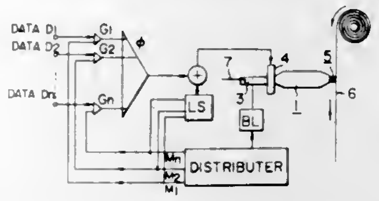
U.S. Cl. 346—1 **10 Claims**

This disclosure is directed to a reversible, yet optionally permanent dual electro-optical record and storage medium, bistable in both the optical and electrical modes and non-volatile in the electrical mode having high resistivity contrast in the electrical mode between the write and erase states, high resolution and contrast in the optical mode between the write and erase states. The record medium can be used for display purposes and is capable of high bitpacking density and thermal microrecording and erasure and comprises a baked oxide solid film material containing lead oxide, boron oxide, copper oxide and silicon dioxide (silica) as major components and optionally minor concentrations of other oxides (depending on the glass substrate upon which the record medium is formed).

3,704,468
ELECTRONIC GRAPHIC RECORDING SYSTEM

Wasaburo Ohta, Yokohama, and Noboru Murayama, Sagamihara, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan
Filed April 24, 1970, Ser. No. 31,598
Claims priority, application Japan, April 25, 1969, 44/32096
Int. Cl. G01d *15/06*
U.S. Cl. 346—74 CR **6 Claims**

An electronic graphic recording system is provided in which the electron beam deflection in marking means as cathode-ray tube or the like is controlled in response to a signal representative of a variable or data and a signal representative of the electron beam deflection is recorded upon moving exhibiting means, thereby providing a record of the variable or data as a function of time. A circuit for shifting the level of the variable or data signal by a predetermined level and a blanking circuit are further added so that a plurality of variables or data may be recorded upon a single exhibiting means.



ERRATUM

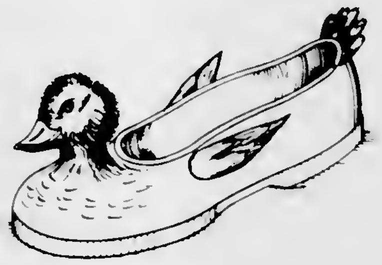
For Class 346—40 see:
Patent No. 3,704,344

DESIGNS

NOVEMBER 28, 1972

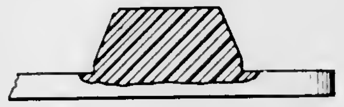
225,188
OVERSHOE

Mary Keeney Iskyan, 34—15 74th St., Jackson Heights, N.Y. 11372
Filed Sept. 4, 1970, Ser. No. 24,834
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—279



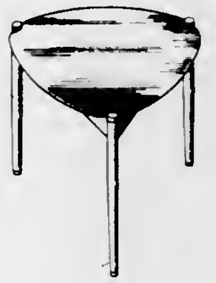
225,189
SHOE SOLE

Otho Davis, Durham, N.C., assignor to Cameron Athletic Corporation, Houston, Tex.
Original design application Apr. 21, 1971, Ser. No. 22,548, now Patent No. 221,122, dated July 13, 1971. Divided and this application Sept. 28, 1970, Ser. No. 25,225
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—319



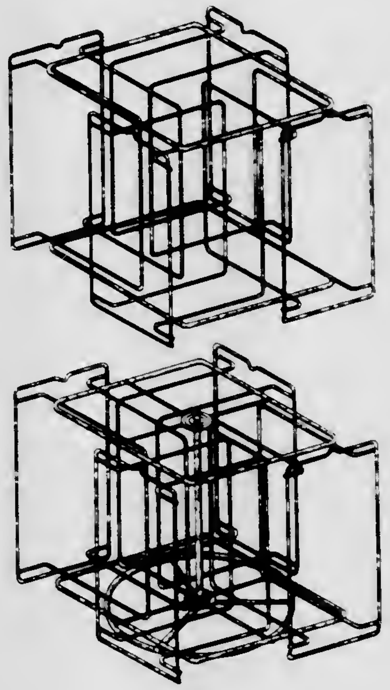
225,190
CONVERTIBLE TABLE

Auburn G. Van Syoc, Belding, Mich., assignor to Lu Van, Incorporated, Belding, Mich.
Filed Mar. 10, 1970, Ser. No. 21,840
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—3



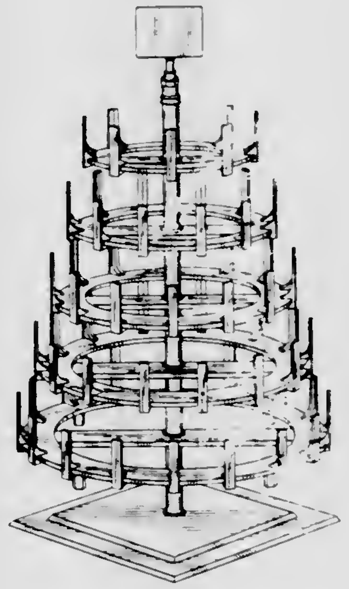
225,191
DISPLAY STAND

Andelfo J. Russo, Blauvelt, N.Y., assignor to Cadillac Wire Corp., Elmsford, N.Y.
Filed Mar. 19, 1971, Ser. No. 126,392
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—28

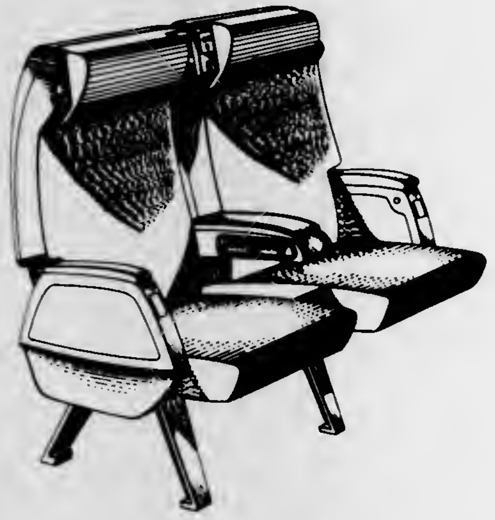


225,192
DISPLAY STAND

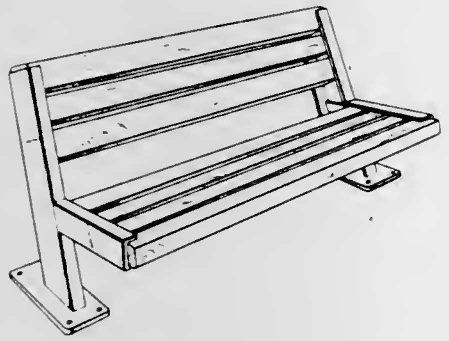
Michael Chernow, New York, N.Y., and Fred E. Yarkoni, Paramus, N.J., assignors to Monocraft, Inc.
Filed Aug. 2, 1971, Ser. No. 168,518
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—28



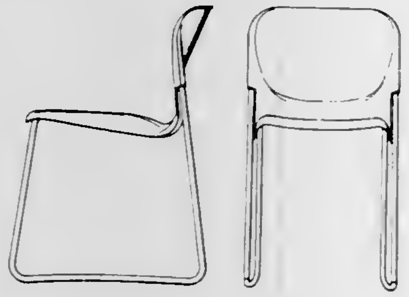
225,193
AIRPLANE SEAT
Chester J. Barecki, Grand Rapids, Mich., assignor to
American Seating Company, Grand Rapids, Mich.
Filed Feb. 22, 1971, Ser. No. 117,853
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—48



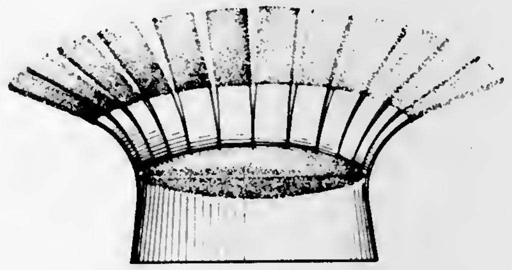
225,194
BENCH
Douglas M. Ruth, 1901 NE. 18th St.,
Fort Lauderdale, Fla. 33305
Filed Feb. 17, 1971, Ser. No. 116,303
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—60



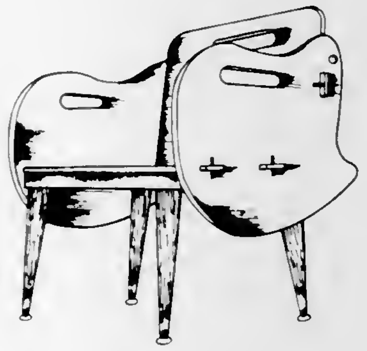
225,195
CHAIR
Gerd Lange, Kapsweyer, Pfalz, Germany, assignor to
Firma Drabert Sohne, Minden, Westphalia, Germany
Filed Nov. 9, 1970, Ser. No. 25,888
Claims priority, application Italy May 18, 1970
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—66



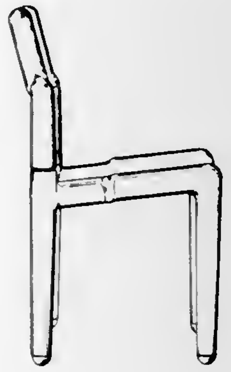
225,196
CHAIR OR SIMILAR ARTICLE
Leandre A. Poisson, 25 Newell St.,
Manchester, N.H. 03101
Filed July 15, 1970, Ser. No. 23,967
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—69



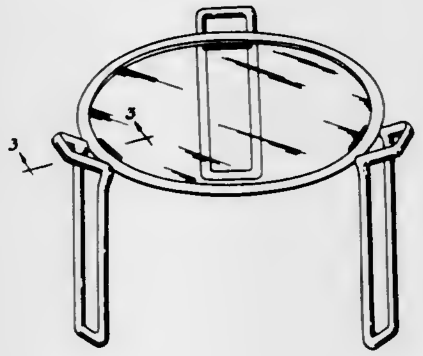
225,197
CHAIR
Earl E. Lockwood, 35 Crosby St.,
East Hartford, Conn. 06118
Filed Jan. 15, 1971, Ser. No. 106,942
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—71



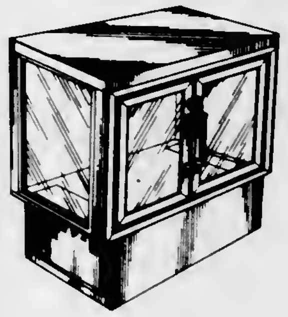
225,198
CHAIR
Tom Erik Torbjorn Ahlstrom and Hans Otto Georg
Ehrich, both of 13 Brannkyrkagatan, Stockholm, Sweden
Filed Feb. 16, 1971, Ser. No. 115,937
Term of patent 7 years
Int. Cl. D6—*02*
U.S. Cl. D6—78



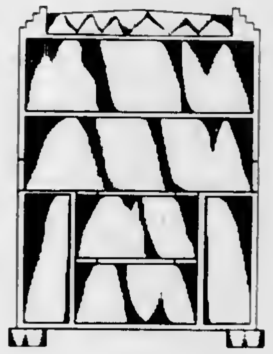
225,199
TABLE
Jonathan Ginat, ℅ A.C.I. Trading Co., Ltd.,
134 5th Ave., New York, N.Y. 10011
Filed Dec. 29, 1970, Ser. No. 26,692
Term of patent 7 years
Int. Cl. D6—*03*
U.S. Cl. D6—146



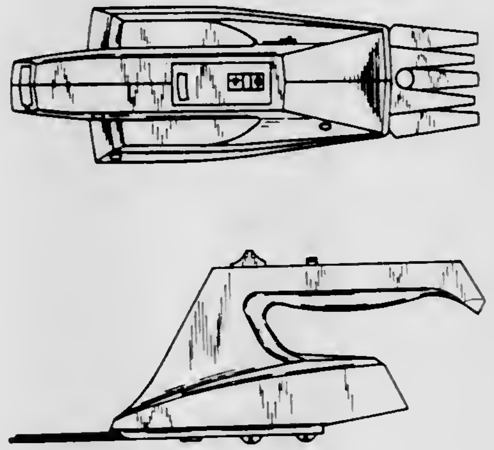
225,200
REFRIGERATED SHOW CASE
Tony J. Bressickello, 13015 S. Normandie Blvd.,
Gardena, Calif. 90249
Filed Oct. 8, 1970, Ser. No. 25,392
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—172



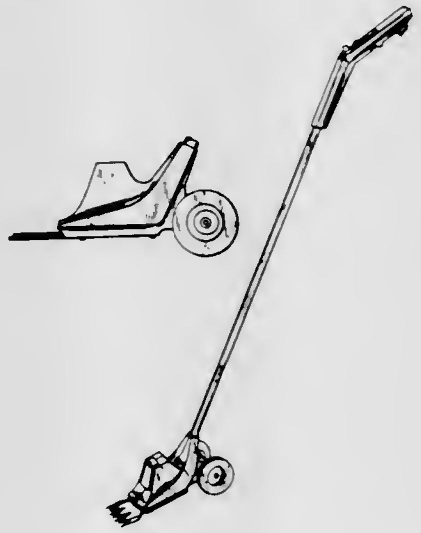
225,201
BOOKCASE
Henry S. Akola, Glendale, Calif. (℅ John E. Wagner,
1041 E. Green St., Suite 202, Pasadena, Calif. 91101)
Filed Aug. 13, 1970, Ser. No. 24,482
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186



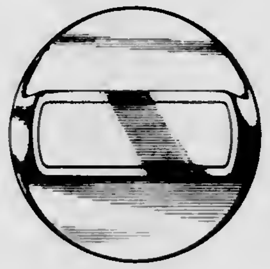
225,202
CORDLESS SHEAR
William E. Bartasevich, Jr., Glenshaw, Pa., assignor to
Disston, Inc., Pittsburgh, Pa.
Filed Mar. 1, 1971, Ser. No. 119,982
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—8



225,203
UPRIGHT CORDLESS ELECTRIC GRASS SHEAR
James E. Edgell, Bradford Woods, Pa., assignor to
Disston, Inc., Pittsburgh, Pa.
Filed Mar. 1, 1971, Ser. No. 119,983
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—8



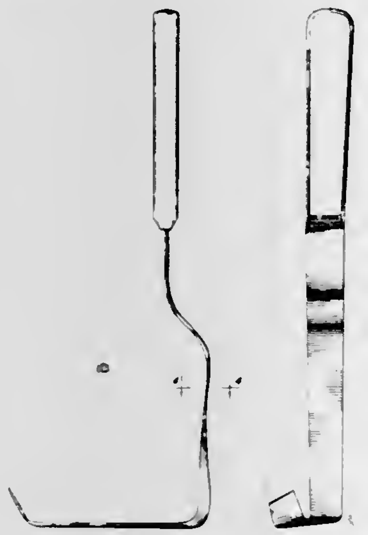
225,204
THUMB TURN FOR A LOCK
Marron Kendrick, Atherton, Calif., assignor to
Schlage Lock Company
Filed Apr. 7, 1971, Ser. No. 132,268
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—108



225,205
HAND-HELD GARDEN HOE OR SIMILAR ARTICLE

Eugene B. Miller, 14515 Michigan Ave., Riverdale, Ill. 60627
Filed Mar. 17, 1971, Ser. No. 125,453
Term of patent 14 years
Int. Cl. D8—*03*

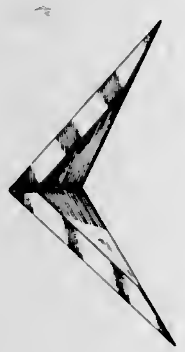
U.S. Cl. D8—12



225,206
VEHICLE DOOR HANDLE SHIELD

Larry D. Heggen, 530 N. 4th, Carlisle, Iowa 50047
Filed Aug. 18, 1969, Ser. No. 18,741
Term of patent 14 years
Int. Cl. D8—*09*

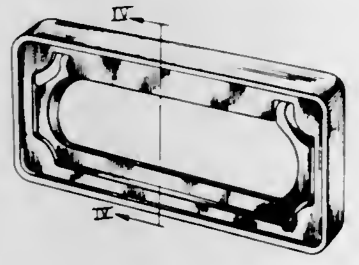
U.S. Cl. D8—137



225,207
SIMULATED FLUSH PULL

William Doyle Watt, Jr., Grand Rapids, Mich., assignor to Keeler Brass Company, Grand Rapids, Mich.
Filed Mar. 15, 1971, Ser. No. 124,612
Term of patent 14 years
Int. Cl. D8—*06*

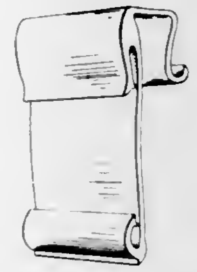
U.S. Cl. D8—158



225,208
PRICE TAG HOLDER

Terry G. Miller, 1469 Campbell, Apt. 40, Houston, Tex. 72055
Filed Mar. 8, 1971, Ser. No. 122,282
Term of patent 14 years
Int. Cl. D8—*08*

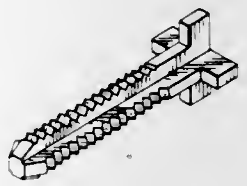
U.S. Cl. D8—244



225,209
SCREW

Terence Robert Raynor, London, and Philip Sydney Smith, Bideford, England, assignors to AMP Incorporated, Harrisburg, Pa.
Filed Jan. 21, 1971, Ser. No. 108,684
Claims priority, application Great Britain Aug. 8, 1970
Term of patent 14 years
Int. Cl. D8—*08*

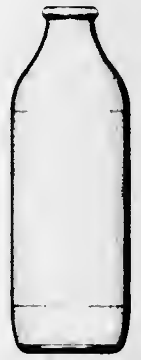
U.S. Cl. D8—267



225,210
BOTTLE

Kurt Becker, Obernkirchen, Germany, assignor to Hermann Heye, Allee, Germany
Filed Aug. 25, 1970, Ser. No. 24,682
Claims priority, application Germany Mar. 6, 1970
Term of patent 14 years
Int. Cl. D9—*01*

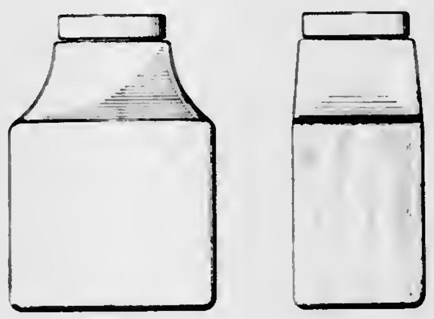
U.S. Cl. D9—99



225,211
PACKAGING CONTAINER OR SIMILAR ARTICLE

Mortimer D. Sackler, New York, N.Y., and Mordecai R. Craig, Demarest, N.J., assignors to Synergistics
Filed June 28, 1971, Ser. No. 157,807
Term of patent 14 years
Int. Cl. D9—*01*

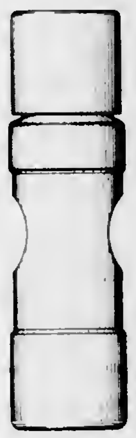
U.S. Cl. D9—163



225,212
BOTTLE

Alain Pieyre de Mandiargues, Paris, France, assignor to Parfums Guy Laroche, Paris, France
Filed Nov. 13, 1970, Ser. No. 25,965
Claims priority, application France May 13, 1970
Term of patent 14 years
Int. Cl. D9—*01*

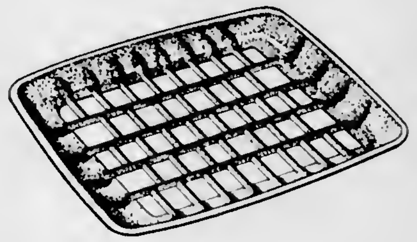
U.S. Cl. D9—169



225,213
MOLDED PACKAGING TRAY FOR MEAT OR THE LIKE

Richard F. Reifers, New Canaan, Conn., and Kenneth D. Bixler, Huntington, N.Y., assignors to Diamond International Corporation, New York, N.Y.
Filed Jan. 27, 1971, Ser. No. 110,352
Term of patent 14 years
Int. Cl. D9—*03*

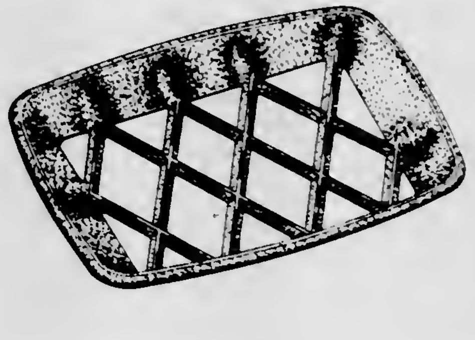
U.S. Cl. D9—219



225,214
MOLDED PACKAGING TRAY FOR MEAT OR THE LIKE

Richard F. Reifers, New Canaan, Conn., and Kenneth D. Bixler, Huntington, N.Y., assignors to Diamond International Corporation, New York, N.Y.
Filed Jan. 27, 1971, Ser. No. 110,365
Term of patent 14 years
Int. Cl. D9—*03*

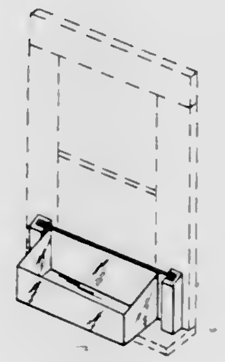
U.S. Cl. D9—219



225,215
REMOVABLE WINDOW CASE STRUCTURE

John P. Francis, 20 Boston St., Haverhill, Mass. 01830
Continuation-in-part of design application Ser. No. 19,899, Nov. 3, 1969. This application Oct. 2, 1970, Ser. No. 25,311
Term of patent 14 years
The portion of the term of the patent subsequent to Mar. 9, 1985, has been disclaimed
Int. Cl. D25—*02*

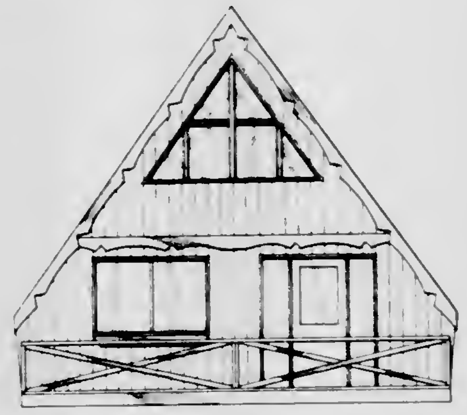
U.S. Cl. D13—1



225,216
MODULAR HOME

Roger A. King and Keith O. Burton, Elkhart, Ind., assignors to Bur Kin Homes Corporation, White Pigeon, Mich.
Filed Jan. 11, 1971, Ser. No. 105,761
Term of patent 14 years
Int. Cl. D25—*03*

U.S. Cl. D13—1

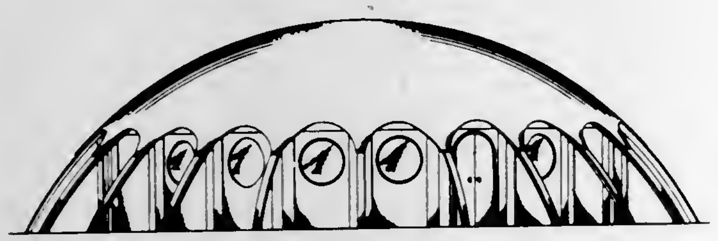


225,217

HOUSE

Joseph D. Yacoboni, 740 Olivant Place,
Pittsburgh, Pa. 15206
Filed Nov. 1, 1971, Ser. No. 194,806
Term of patent 14 years
Int. Cl. D25—*03*

U.S. Cl. D13—1

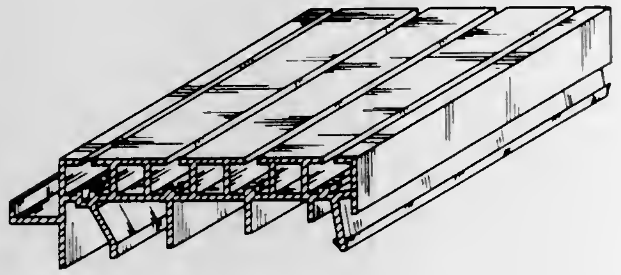


225,218

EXTRUDED PLASTIC SILL TRACK FOR A WINDOW UNIT

Dominique Dallaire and Raymond M. Dallaire, St. David, Quebec, Canada, assignors to P.H. Plastics Inc., Lauzon, Quebec, Canada
Filed Jan. 13, 1971, Ser. No. 106,297
Term of patent 14 years
Int. Cl. D25—*01*

U.S. Cl. D13—6

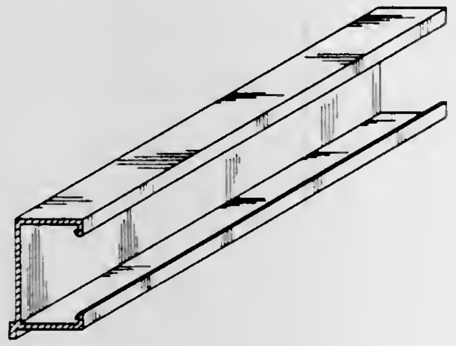


225,219

EXTRUDED PLASTIC FRAME COVERING FOR A WINDOW UNIT

Dominique Dallaire and Raymond M. Dallaire, St. David, Quebec, Canada, assignors to P.H. Plastics Inc., Lauzon, Quebec, Canada
Filed Jan. 13, 1971, Ser. No. 106,300
Term of patent 14 years
Int. Cl. D25—*01*

U.S. Cl. D13—6

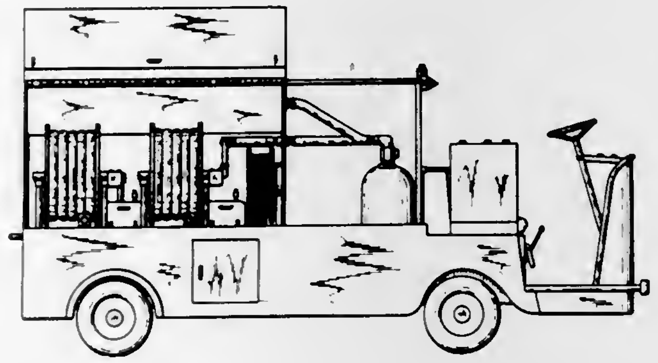


225,220

MOBILE FIRE DETECTION AND SUPPRESSION UNIT

Robert E. Benshoof, Covina, Calif., assignor to CBF Systems, Inc., Covina, Calif.
Filed Jan. 11, 1971, Ser. No. 105,756
Term of patent 14 years
Int. Cl. D12—*08*

U.S. Cl. D14—3

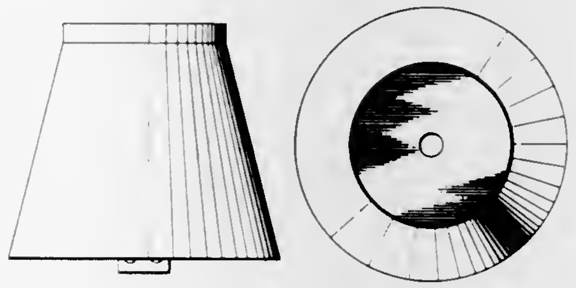


225,221

AUTOMOBILE ANTENNA IDENTIFICATION DEVICE

Thaddeus A. Sikorski and Helen K. Sikorski, both of 208 Haddon Ave., Collingswood, N.J. 08108
Filed May 28, 1971, Ser. No. 148,295
Term of patent 7 years
Int. Cl. D12—*16*

U.S. Cl. D14—6

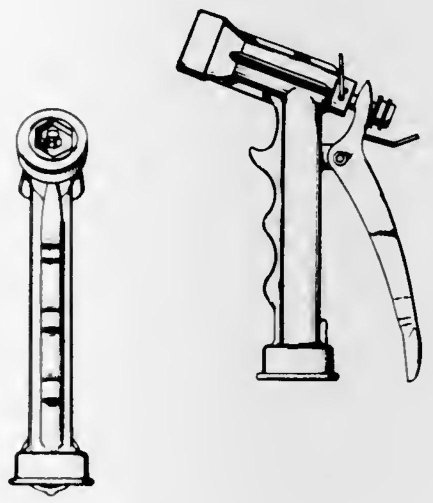


225,222

HOSE NOZZLE

Robert A. Gilmour, Somerset, Pa., assignor to Gilmour Manufacturing Company, a division of R. M. Smith, Inc., Somerset, Pa.
Filed Dec. 21, 1970, Ser. No. 26,599
Term of patent 14 years
Int. Cl. D23—*01*

U.S. Cl. D23—34

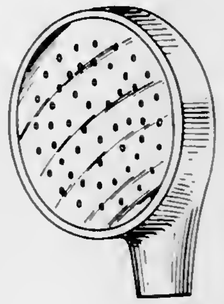


225,223

SPRAY HEAD

Jordan I. Rotheiser, Highland Park, Ill., assignor to Selfix, Inc.
Filed Dec. 21, 1970, Ser. No. 26,575
Term of patent 14 years
Int. Cl. D23—*01*

U.S. Cl. D23—35

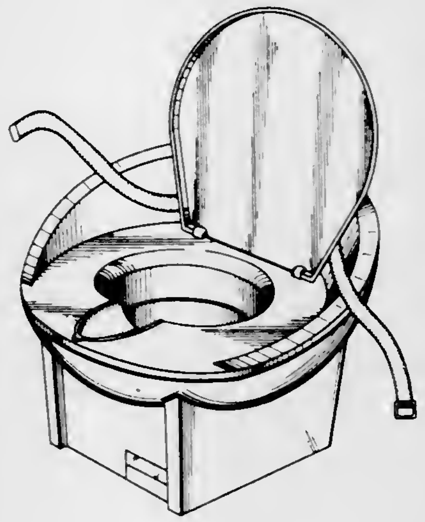


225,224

INFANT'S TRAINING CHAIR

E. Burton Benjamin, Highland Park, Ill., assignor to Welsh-Co., St. Louis, Mo.
Filed Oct. 9, 1970, Ser. No. 25,404
Term of patent 14 years
Int. Cl. D23—*02*

U.S. Cl. D23—53

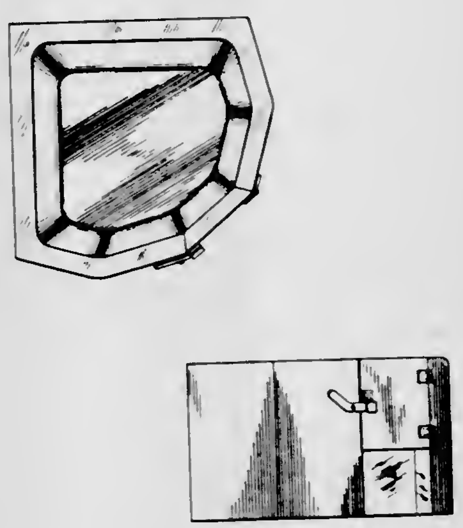


225,225

BATHTUB

Lionel E. Russell, Rte. 1, Oologah, Okla. 74053
Filed Nov. 13, 1970, Ser. No. 25,972
Term of patent 14 years
Int. Cl. D23—*02*

U.S. Cl. D23—55

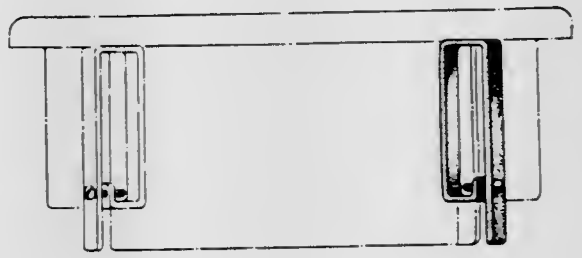


225,226

SUPPORT LEG FOR ELEVATED TOILET SEAT

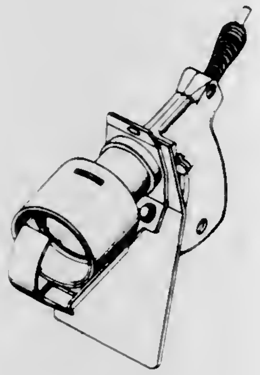
William R. Brewer, Arleta, Calif., assignor to Hamilton C. de Jong (doing business as Safety Brothers), Pasadena, Calif.
Original design application Apr. 22, 1970, Ser. No. 22,557. Divided and this application Oct. 13, 1971, Ser. No. 189,076
Term of patent 14 years
Int. Cl. D23—*02*

U.S. Cl. D23—71



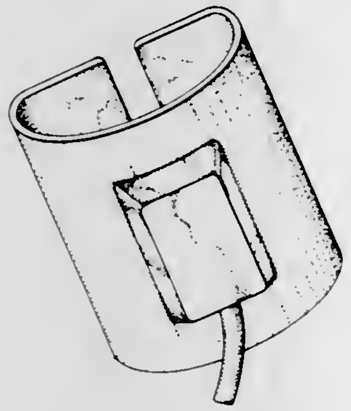
225,227
PORTABLE COMBINED HEATER AND LAMP

Jules A. Court, Palo Alto, Calif., assignor to
TC Products, Palo Alto, Calif.
Filed Dec. 9, 1969, Ser. No. 20,424
Term of patent 14 years
Int. Cl. D23—*03*; D26—*02*
U.S. Cl. D23—77



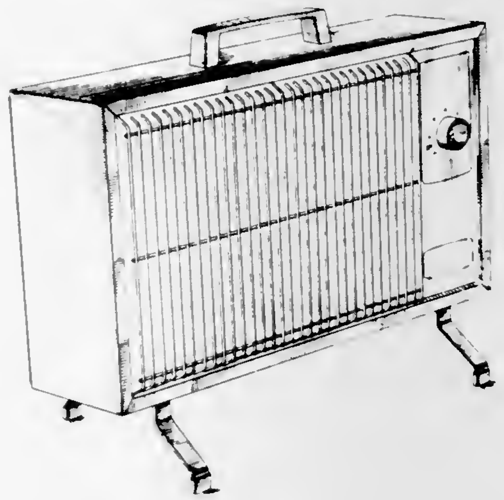
225,228
ELECTRIC RESISTANCE HEATER

Edwin D. Hoyt, Hemet, Calif., assignor to Rama
Industrial Heater Co., San Jacinto, Calif.
Filed Apr. 26, 1971, Ser. No. 137,739
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—77



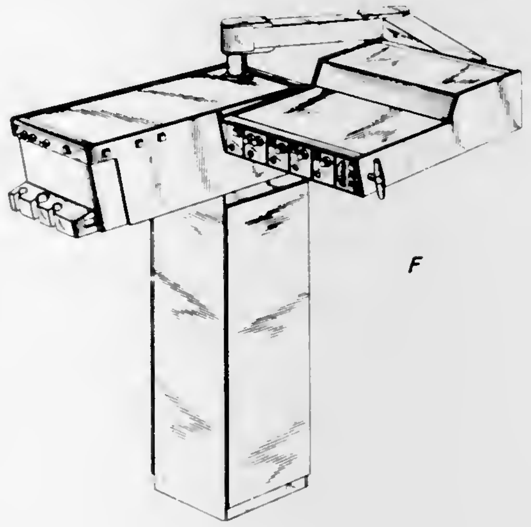
225,229
PORTABLE ELECTRIC HEATER

William J. Cook, Trumbull, Conn., assignor to
General Electric Company
Filed Mar. 15, 1971, Ser. No. 124,631
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—123



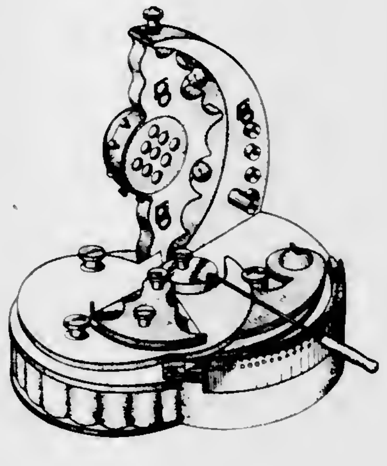
225,230
DENTAL OPERATORY UNIT

H. John Kretschmer, New York, N.Y., assignor to
Modumatic Industries, Inc.
Filed Sept. 23, 1971, Ser. No. 183,295
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—1



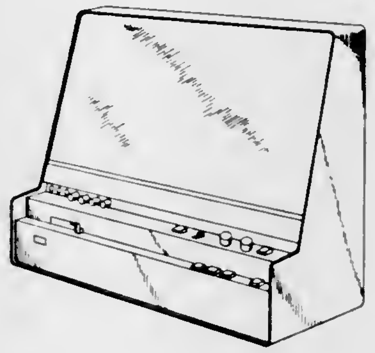
225,231
AUDIBLE TRAINING DEVICE OR THE LIKE

Gerard J. O Brien, 33 Pamrapo Ave.,
Jersey City, N.J. 07307
Filed Dec. 2, 1970, Ser. No. 26,249
Term of patent 14 years
Int. Cl. D19—*08*
U.S. Cl. D25—1



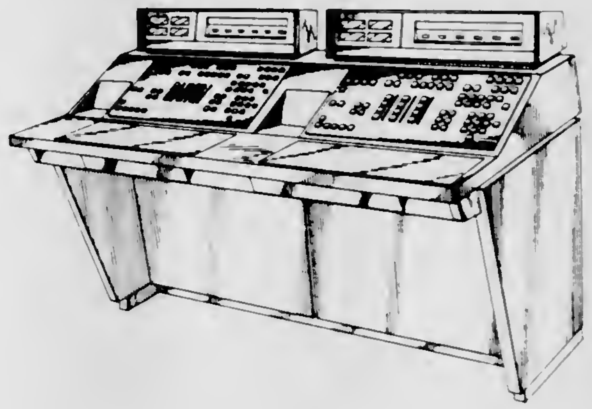
225,232
TEACHING MACHINE

Floyd L. Arnold, Marlboro, N.J., John Bruce, Wilton, Conn., and Philip A. Celli, Lincroft, and James R. Patmore, Neptune, N.J., assignors to Electronic Associates, Inc., Long Branch, N.J.
Filed Dec. 7, 1970, Ser. No. 26,343
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1



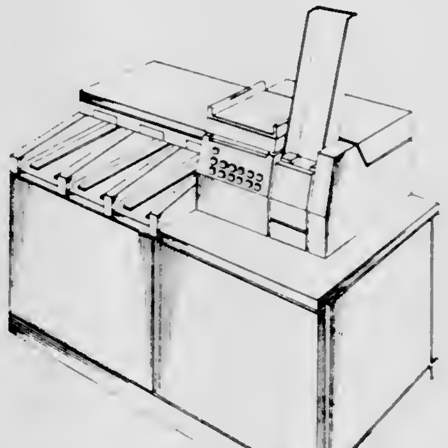
225,233
TELEPHONE OPERATOR'S SERVICE CONSOLE

George M. Janda, Westchester, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Jan. 11, 1971, Ser. No. 105,770
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

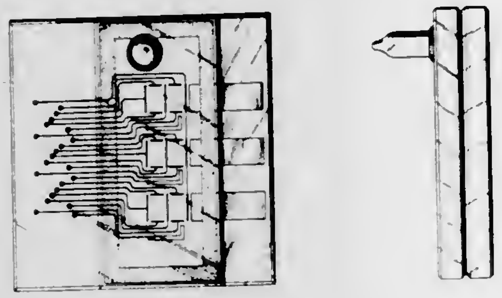


225,234
DOCUMENT READER

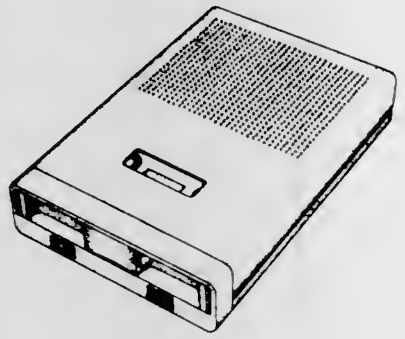
Wayne L. Aderman, Zumbro Falls, and Collan B. Kneale, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 2, 1971, Ser. No. 112,093
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



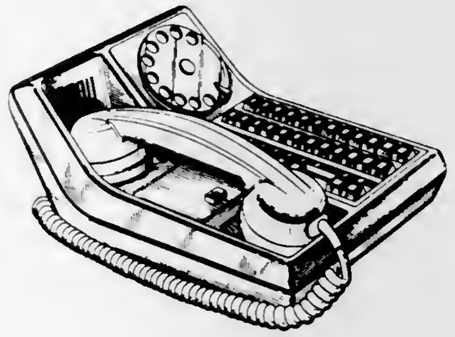
225,235
SEGMENTED NUMERIC DISPLAY PANEL
Richard A. Martel, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed Dec. 28, 1970, Ser. No. 26,649
Term of patent 14 years
Int. Cl. D14—*02*; D20—*03*
U.S. Cl. D26—5



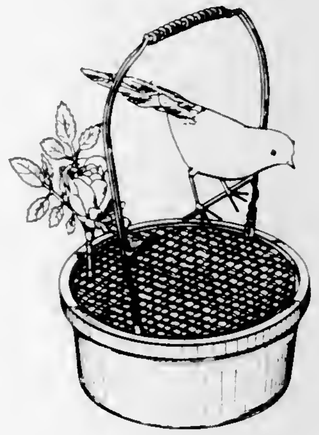
225,236
CASSETTE TAPE RECORDER
Georg Friedrich Papst, Karl-Maier Strasse 1, St. Georgen, Germany
Filed Mar. 25, 1971, Ser. No. 128,205
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14



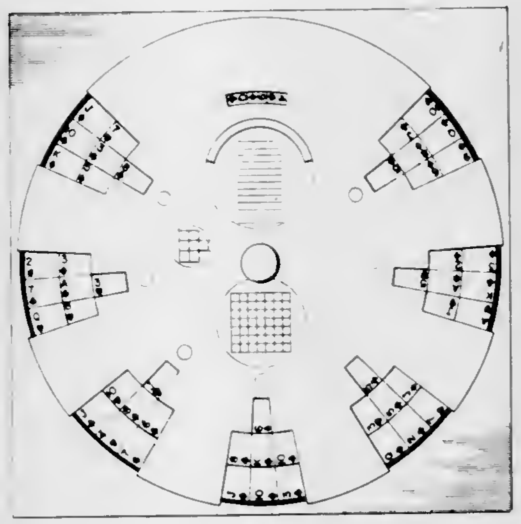
225,237
INTERCOMMUNICATIONS SET
Louis Lucien Lepoix, Baden-Baden, Germany, assignor to La Telephonie Industrielle et Commerciale "Telic"
Filed Apr. 5, 1971, Ser. No. 131,146
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



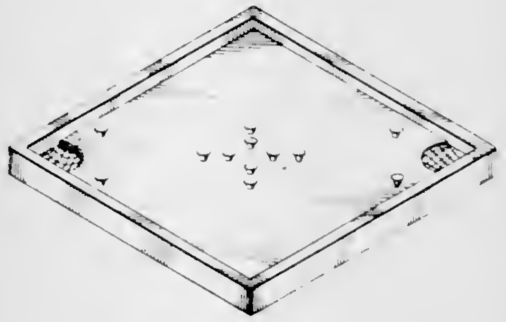
225,238
TABLE ORNAMENT
Chosuke Miyahira, 373 Park Ave. S., New York, N.Y. 10016
Filed Mar. 11, 1971, Ser. No. 123,493
Term of patent 7 years
Int. Cl. D11—*02*
U.S. Cl. D29—23



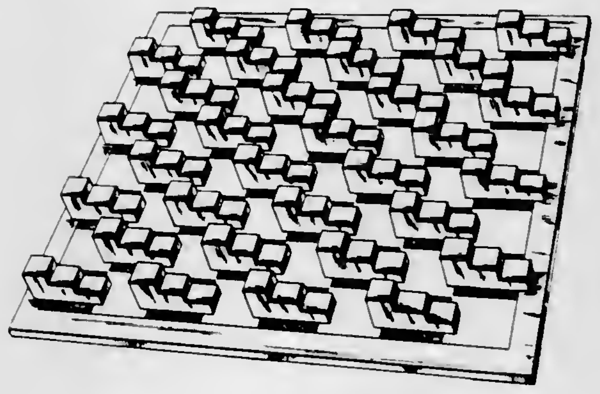
225,239
GAME DEVICE
Elaine G. Vigan, 1932 Weepah Way, Hollywood, Calif. 90046
Filed June 10, 1969, Ser. No. 17,622
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



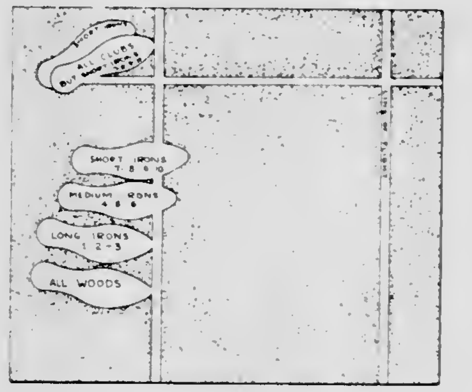
225,240
POOL GAME BOARD
Alfred C. Einstein and Norman C. Wolff, Jr., Clayton, Mo., and Helmar David Moran, York, Pa., assignors to Affiliated Hospital Products, Inc., St. Louis, Mo.
Filed Feb. 20, 1970, Ser. No. 21,554
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



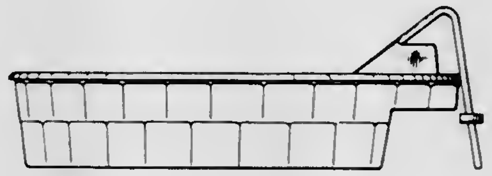
225,241
THREE-DIMENSIONAL GAME BOARD
T. Walton Westlake, P.O. Box 256, Philipsburg, St. Martin, Netherlands Antilles
Filed May 27, 1970, Ser. No. 23,168
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



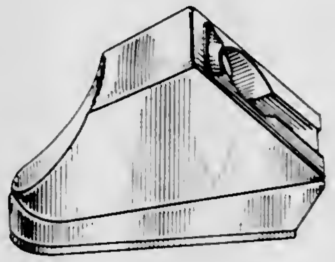
225,242
GOLF PRACTICE MAT
Forrest W. Pruitt, 1405 Gayla Drive, Quincy, Ill. 62301
Filed July 21, 1970, Ser. No. 24,044
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



225,243
SWIMMING POOL
Ascher Chase, Norfolk, Va., assignor to General Foam Plastics Corp., Norfolk, Va.
Filed Sept. 22, 1970, Ser. No. 25,145
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



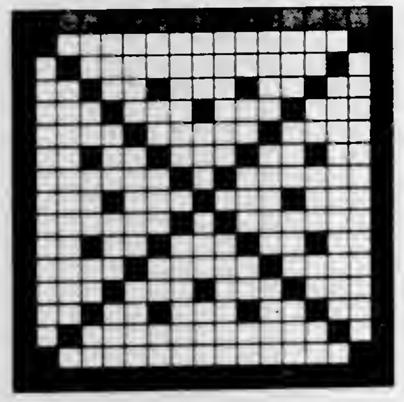
225,244
HOOD FOR BOWLING BALL SUBWAY RETURN
Richard G. Reineman, Balboa, Calif., and George E. Schaefer, Muskegon, Mich., assignors to The Brunswick Corporation
Filed Dec. 15, 1970, Ser. No. 26,515
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



225,245
GAME BOARD

Joachim Berger, 20 Bahnhofstr., 52 Siegburg, Germany
Filed Jan. 13, 1971, Ser. No. 106,315
Term of patent 14 years
Int. Cl. D21—*01*

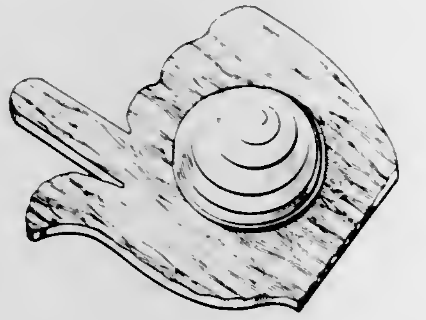
U.S. Cl. D34—5



225,246
POINTER FOR A GAME BOARD OR SIMILAR ARTICLE

Jacob B. Burke, 6771 Yellowstone Blvd., Forest Hills, N.Y. 11375
Filed Feb. 19, 1971, Ser. No. 117,224
Term of patent 14 years
Int. Cl. D21—*01*

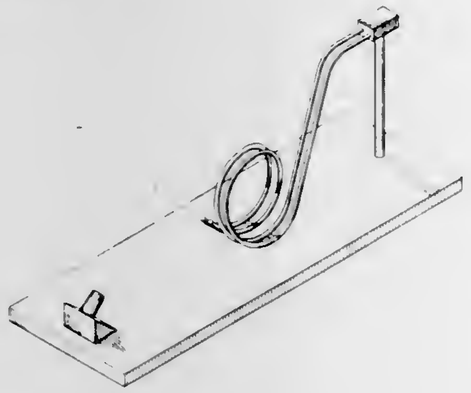
U.S. Cl. D34—5



225,247
MARBLE RUNWAY NOVELTY DEVICE

James D. Hughes, 4714 Spellman, Houston, Tex. 77035
Filed Nov. 23, 1970, Ser. No. 26,122
Term of patent 14 years
Int. Cl. D21—*01*

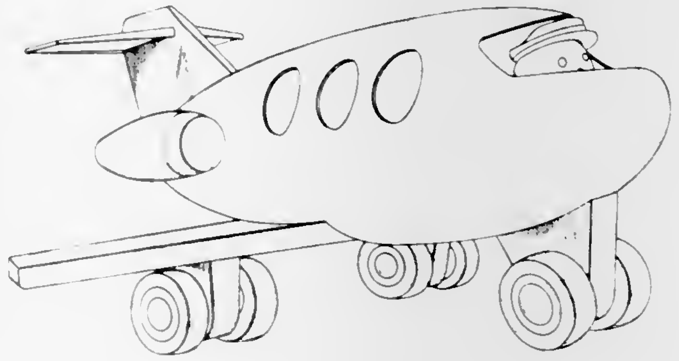
U.S. Cl. D34—15



225,248
TOY AIRPLANE

Robert K. Ostrander, Rolling Meadows, Ill., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Mar. 3, 1971, Ser. No. 120,791
Term of patent 14 years
Int. Cl. D12—*01*

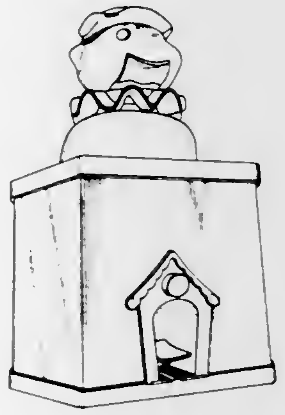
U.S. Cl. D34—15



225,249
JACK-IN-THE-BOX TOY

Robert K. Ostrander, Rolling Meadows, Ill., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Mar. 3, 1971, Ser. No. 120,792
Term of patent 14 years
Int. Cl. D21—*01*

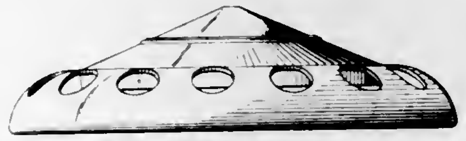
U.S. Cl. D34—15



225,250
AERIAL TOY

George C. Sun, 801 Cooper Landing Road, Cherry Hill, N.J. 08034
Filed Mar. 31, 1971, Ser. No. 130,044
Term of patent 14 years
Int. Cl. D21—*01*

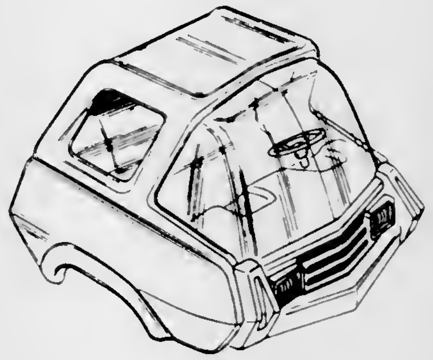
U.S. Cl. D34—15



225,251
TOY VEHICLE CAB

Vernon A. Peterson, Minneapolis, Minn., assignor to Tonka Corporation, Mound, Minn.
Filed May 24, 1971, Ser. No. 146,583
Term of patent 7 years
Int. Cl. D21—*01*

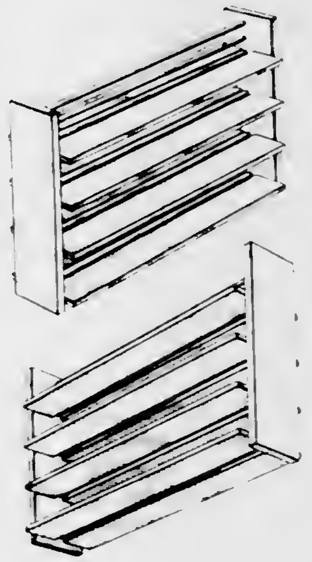
U.S. Cl. D34—15



225,252
PLANT GROWTH APPARATUS

R. Louis Ware, 2108 Middle Fork Road, Northfield, Ill. 60093
Filed Sept. 21, 1970, Ser. No. 25,087
Term of patent 14 years
Int. Cl. D6—*05*

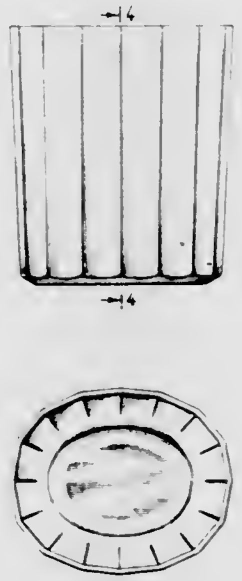
U.S. Cl. D35—3



225,253
DRINKING GLASS OR THE LIKE

Jens H. Quistgaard, Copenhagen, Denmark, assignor to Dansk Designs Ltd., Mount Kisco, N.Y.
Filed Oct. 30, 1970, Ser. No. 25,730
Term of patent 14 years
Int. Cl. D7—*01*

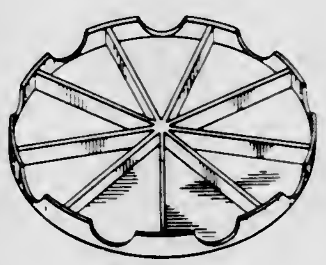
U.S. Cl. D36—8



225,254
PIZZA TRAY

Daniel J. Meaney, Jr., Duluth, Minn., assignor to Jeno's, Inc., Duluth, Minn.
Filed Jan. 21, 1971, Ser. No. 108,696
Term of patent 3½ years
Int. Cl. D7—*02*

U.S. Cl. D44—1

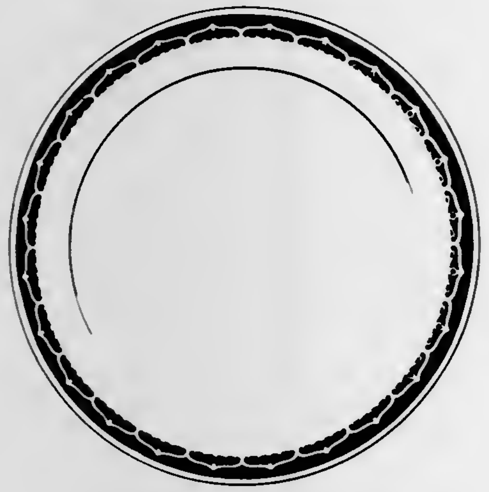


225,255

DINNER PLATE OR SIMILAR ARTICLE

Rebecca M. McMahon, Syracuse, N.Y., assignor to
Syracuse China Corporation, Syracuse, N.Y.
Filed Apr. 22, 1971, Ser. No. 136,645
Term of patent 14 years
Int. Cl. D7—*01*

U.S. Cl. D44—15

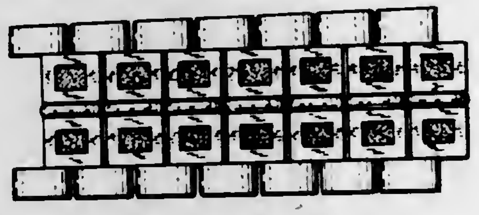


225,256

LINK CHAIN FOR A BRACELET OR SIMILAR ARTICLE

Yuen Sang Poon, Hong Kong, assignor to Yuen Sang
Hardware Co., Ltd.
Filed Mar. 15, 1971, Ser. No. 124,622
Term of patent 14 years
Int. Cl. D11—*01*

U.S. Cl. D45—4

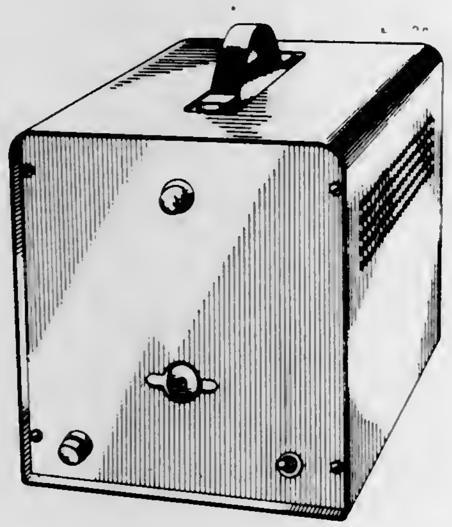


225,257

DUAL PLUG CLEANER

Wilbert E. Thrasher, 14421 SW. 288th St.,
Leisure City, Fla. 33030
Filed Feb. 24, 1970, Ser. No. 20,926
Term of patent 14 years
Int. Cl. D15—*09*

U.S. Cl. D49—11

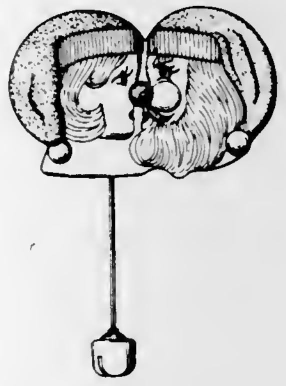


225,258

ILLUMINABLE NOVELTY PIN

Perry Feuer, Roslyn, N.Y., assignor to Creative
Creations, Inc., New York, N.Y.
Filed Feb. 25, 1971, Ser. No. 119,077
Term of patent 14 years
Int. Cl. D11—*01*

U.S. Cl. D45—19

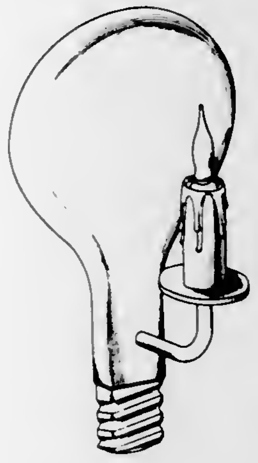


225,259

BRACKET LAMP OR SIMILAR ARTICLE

Frank Skupien, 5443 S. Wolcott, Chicago, Ill. 60609
Filed May 20, 1971, Ser. No. 145,598
Term of patent 14 years
Int. Cl. D26—*05*

U.S. Cl. D48—4

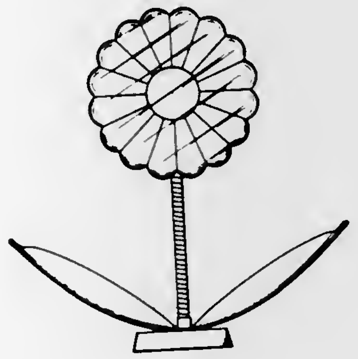


225,260

LAMP

Stephen W. Morris, 1324 E. Shore Drive,
Alameda, Calif. 94501
Filed Mar. 1, 1971, Ser. No. 120,003
Term of patent 14 years
Int. Cl. D26—*05*

U.S. Cl. D48—20

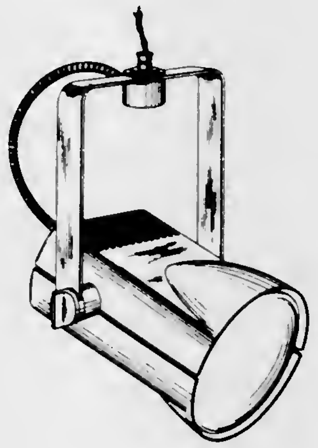


225,261

FLOODLIGHT

Herve Houplain, Demeurant 41, Lamotte-Beuvron, France
Filed Dec. 15, 1971, Ser. No. 208,517
Claims priority, application France July 22, 1971
Term of patent 14 years
Int. Cl. D26—*03*

U.S. Cl. D48—20

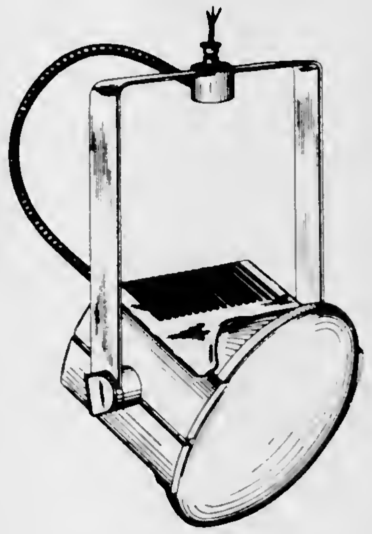


225,262

FLOODLIGHT

Herve Houplain, Demeurant 41, Lamotte-Beuvron, France
Filed Dec. 15, 1971, Ser. No. 208,518
Claims priority, application France July 22, 1971
Term of patent 14 years
Int. Cl. D26—*03*

U.S. Cl. D48—20

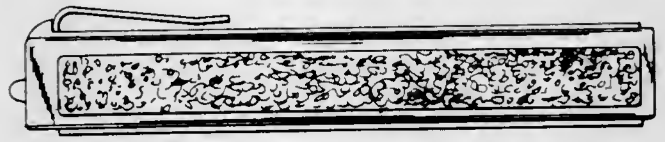


225,263

FLASHLIGHT

Joseph G. Bacevius, Shelton, Conn., assignor to
Paul G. Garrity, Stamford, Conn.
Filed Apr. 9, 1971, Ser. No. 132,931
Term of patent 14 years
Int. Cl. D26—*02*

U.S. Cl. D48—24

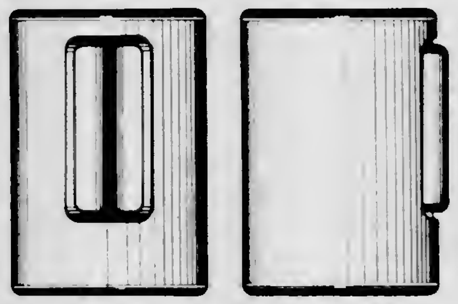


225,264

TABLE LIGHTER

Dieter Rams, Konigstein, Taunus, Germany, assignor to
Braun Aktiengesellschaft, Frankfurt am Main, Germany
Filed Mar. 25, 1970, Ser. No. 21,942
Claims priority, application Germany Oct. 13, 1969
Term of patent 14 years
Int. Cl. D27—*05*

U.S. Cl. D48—27

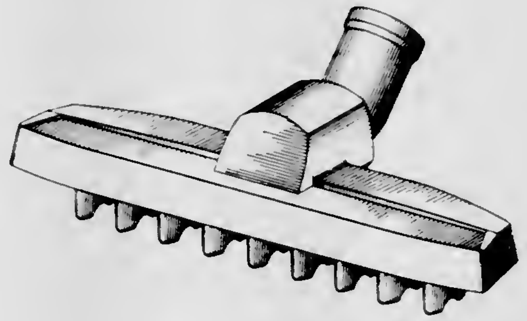


225,265

RUG CLEANING ATTACHMENT FOR VACUUM CLEANER

Siegmund B. Holubinka, 1022 N. Main St.,
Naperville, Ill. 60540
Filed May 28, 1970, Ser. No. 23,203
Term of patent 14 years
Int. Cl. D15—*05*

U.S. Cl. D49—18

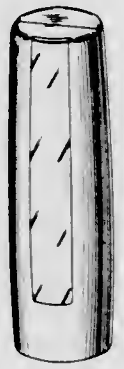


225,266

CUP DISPENSER

Michael Alan Cousins, Huntington, N.Y., assignor to
American Can Company, Greenwich, Conn.
Filed Mar. 25, 1971, Ser. No. 128,218
Term of patent 14 years
Int. Cl. D7—*99*

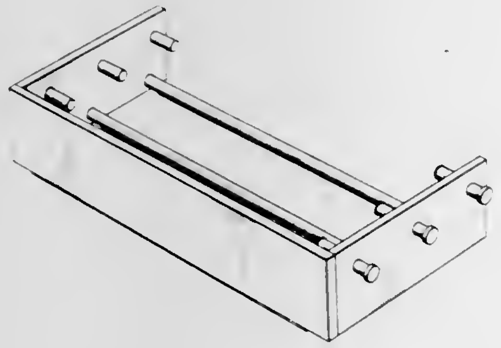
U.S. Cl. D52—2



225,267
WRAP DISPENSER

Harper Roisman, 225 N. Bundy Drive,
Los Angeles, Calif. 90049
Filed June 4, 1971, Ser. No. 150,257
Term of patent 14 years
Int. Cl. D7—*99*

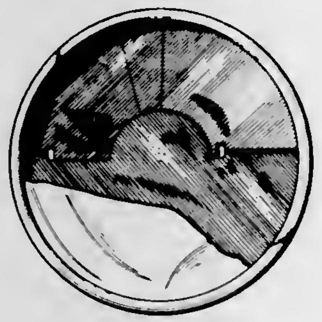
U.S. Cl. D52—2



225,268
PRESSURE GAUGE

Ralph D. Waite, Sellersville, Pa., assignor to
Ametek, Inc., New York, N.Y.
Filed Feb. 19, 1971, Ser. No. 117,222
Term of patent 14 years
Int. Cl. D10—*04*

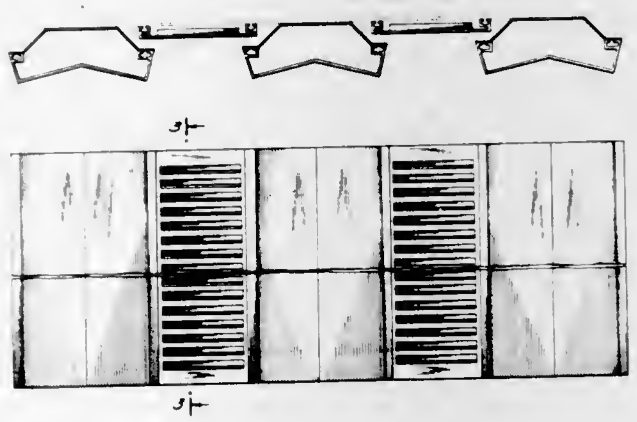
U.S. Cl. D52—6



225,269
GRILLE

Patrick Zampetti and Robert Deuchler, Cranford, N.J., assignors to Construction Specialties Inc., Cranford, N.J.
Filed Mar. 5, 1970, Ser. No. 21,752
Term of patent 14 years
Int. Cl. D25—*02*; D23—*03*

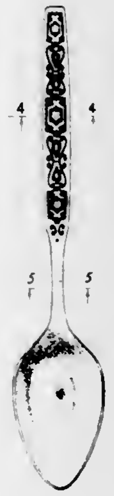
U.S. Cl. D54—2



225,270
SPOON OR SIMILAR ARTICLE

Colin B. Richmond II, Oneida, N.Y., assignor to
Oneida Ltd., Oneida, N.Y.
Filed July 8, 1971, Ser. No. 160,983
Term of patent 14 years
Int. Cl. D7—*03*

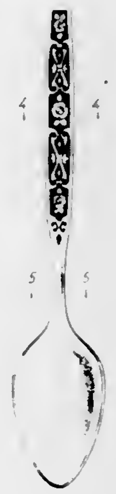
U.S. Cl. D54—12



225,271
SPOON OR SIMILAR ARTICLE

Colin B. Richmond II, Oneida, N.Y., assignor to
Oneida Ltd., Oneida, N.Y.
Filed Dec. 15, 1971, Ser. No. 208,510
Term of patent 14 years
Int. Cl. D7—*03*

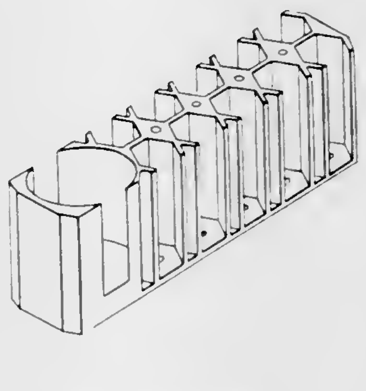
U.S. Cl. D54—12



225,272
TOOL HOLDER

Roger W. Wheeler, Reading, Mich., assignor to
Vaco Products Company
Filed Sept. 21, 1970, Ser. No. 25,112
Term of patent 14 years
Int. Cl. D15—*99*

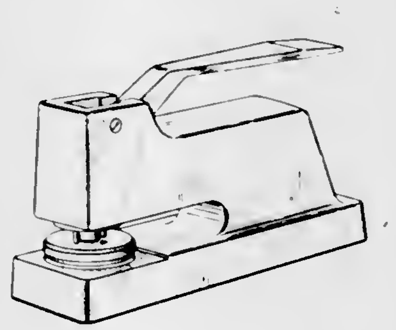
U.S. Cl. D55—1



225,273
SAMPLE CUTTER

James A. King, Sr., Greensboro, N.C., assignor to
J. A. King & Company, Greensboro, N.C.
Filed May 21, 1971, Ser. No. 145,987
Term of patent 14 years
Int. Cl. D8—*03*

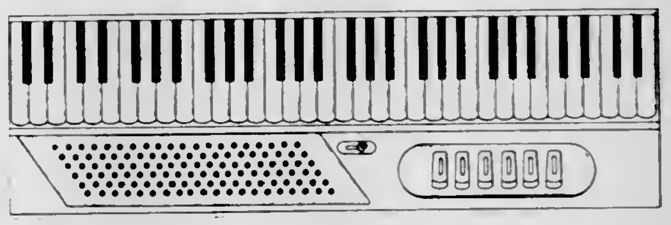
U.S. Cl. D55—1



225,274
KEYBOARD FOR AN ELECTRIC ORGAN OR SIMILAR ARTICLE

Anthony J. Shabbarrasi, 1068 Dewey Ave.,
Rochester, N.Y. 14613
Filed Oct. 9, 1970, Ser. No. 25,409
Term of patent 14 years
Int. Cl. D17—*01*

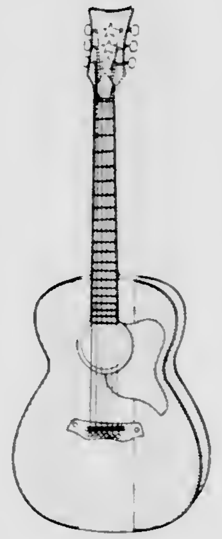
U.S. Cl. D56—1



225,275
GUITAR OR SIMILAR ARTICLE

Buck Owens, Bakersfield, Calif., assignor to Chicago Musical Instrument Co., Lincolnwood, Ill.
Filed Feb. 11, 1971, Ser. No. 114,749
Term of patent 14 years
Int. Cl. D17—*03*

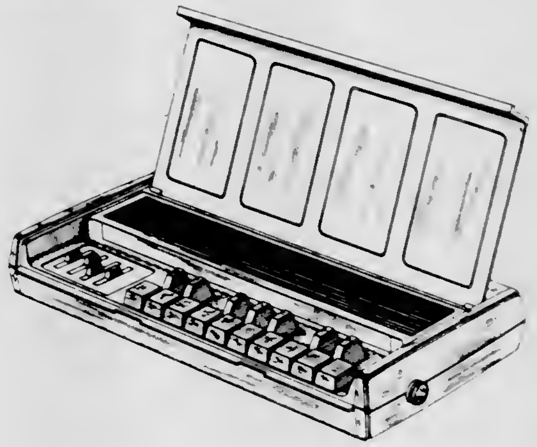
U.S. Cl. D56—1



225,276
MUSICAL INSTRUMENT

Richard Culbertson, Manlius, N.Y., assignor to
General Electric Company
Filed Feb. 25, 1971, Ser. No. 119,069
Term of patent 14 years
Int. Cl. D17—*01*

U.S. Cl. D56—2

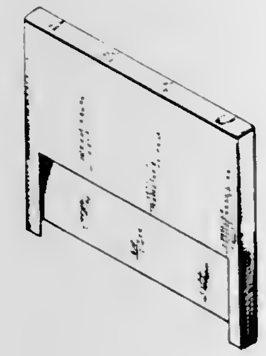


225,277

COVER FOR A BED HEADBOARD OR SIMILAR ARTICLE

Eloise Maxwell Leigh, 409 Mead St. SE.,
Atlanta, Ga. 30315
Filed Dec. 14, 1970, Ser. No. 26,487
Term of patent 14 years
Int. Cl. D6—*01*

U.S. Cl. D6—198

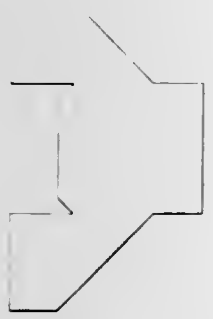


225,278

ADHESIVE TAB FOR ROLLS OF SHEET MATERIAL

Noel John Baker, London, England, assignor to Witton-James Limited, Wembley, Middlesex, England
Filed Nov. 12, 1970, Ser. No. 25,940
Claims priority, application Great Britain May 11, 1970
Term of patent 14 years
Int. Cl. D19—*99*

U.S. Cl. D59—2

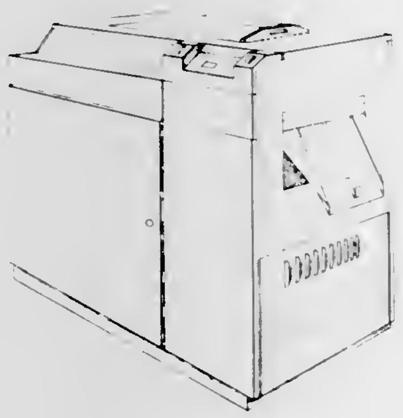


225,279

ELECTROSTATIC COPYING MACHINE

Paul Matwey, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.
Filed Oct. 27, 1970, Ser. No. 25,681
Term of patent 14 years
Int. Cl. D16—*04*

U.S. Cl. D61—1

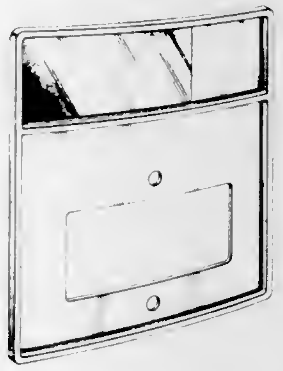


225,280

FRONT PANEL FOR CAMERA OR SIMILAR ARTICLE

James M. Conner, Westchester, N.Y., assignor to Polaroid Corporation, Cambridge, Mass.
Filed June 17, 1971, Ser. No. 154,256
Term of patent 14 years
Int. Cl. D16—*99*

U.S. Cl. D61—1

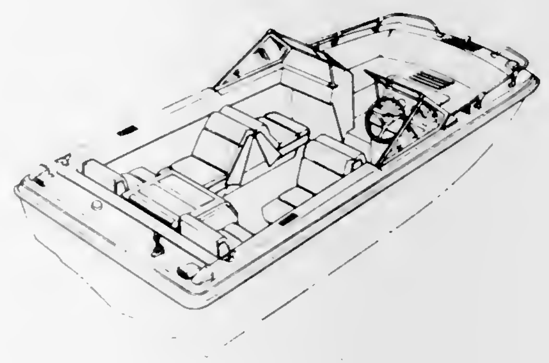


225,281

BOAT UPPER SHELL

Edward W. Peterson, Bannockburn, Ill., assignor to Silverline, Inc., Moorhead, Minn.
Filed Sept. 17, 1970, Ser. No. 25,035
Term of patent 7 years
Int. Cl. D12—*06*

U.S. Cl. D71—1

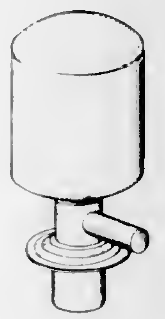


225,282

FLUID DISPENSING UNIT FOR PRIMING ENGINES OR THE LIKE

Gilbert R. Grigsby, Los Angeles, Calif., assignor to Lubrastart International, Pacoima, Calif.
Filed Nov. 27, 1970, Ser. No. 26,197
Term of patent 14 years
Int. Cl. D15—*01*

U.S. Cl. D77—1

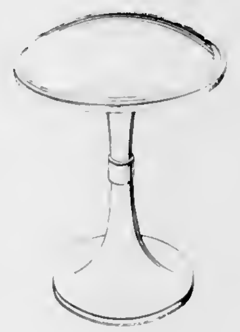


225,283

CLOTHES DISPLAY RACK

Barry Axelrod, Los Angeles, Calif., assignor to Laurel Line Products, Los Angeles, Calif.
Filed Feb. 18, 1971, Ser. No. 116,742
Term of patent 14 years
Int. Cl. D6—*06*

U.S. Cl. D80—8

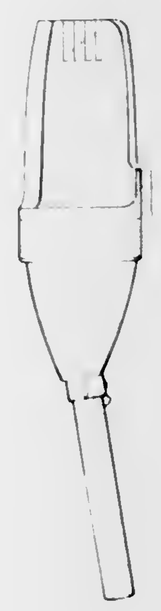


225,284

HANDLE FOR A STYLING COMB

Leandro P. Rizzuto and Milton Schrager, Brooklyn, N.Y., assignors to Continental Hair Products, Inc.
Filed Dec. 16, 1971, Ser. No. 209,005
Term of patent 14 years
Int. Cl. D28—*03*

U.S. Cl. D86—8

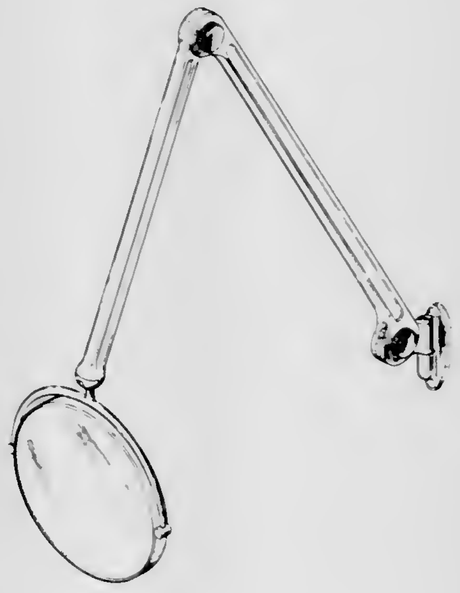


225,285

MIRROR

Michael V. Heckathorn, Northridge, Calif., assignor to Foresight Products, Inc., Chatsworth, Calif.
Filed July 8, 1970, Ser. No. 23,859
Term of patent 14 years
Int. Cl. D6—*07*

U.S. Cl. D86—10

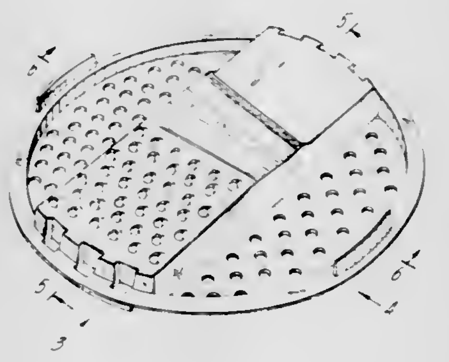


225,286

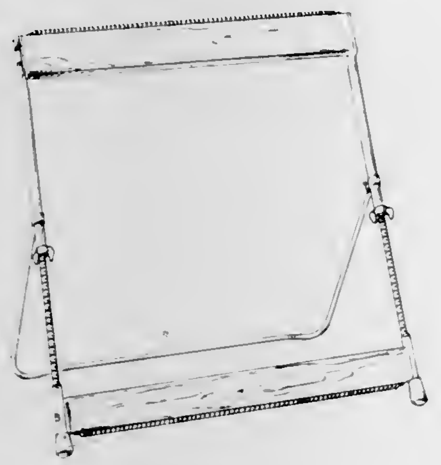
GRATER

Harold P. Ashton, Providence, and James B. Swett, Barrington, R.I., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Dec. 30, 1970, Ser. No. 26,705
Term of patent 14 years
Int. Cl. D7—*04*

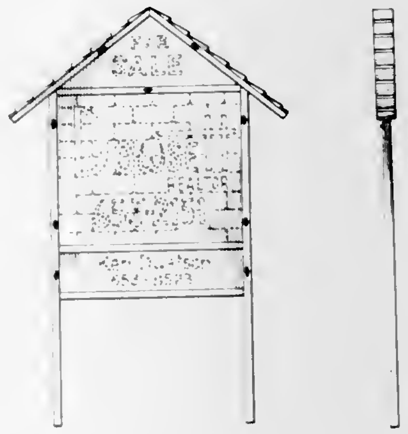
U.S. Cl. D89—1



225,287
WEAVING FRAME
Eva Tandberg, Aslokkveien 26, Slependen, Norway
Filed Aug. 23, 1971, Ser. No. 174,305
Claims priority, application Norway Mar. 18, 1971
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D92—15



225,288
SIGN
James D. Dowsett, 403 Plymouth Drive,
Davison, Mich. 48423
Filed Nov. 27, 1970, Ser. No. 26,200
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF NOVEMBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Abcor, Inc.: *See—*
  - Nuwayser, Elie S., 3,703,896.
- Actron Industries, Inc.: *See—*
  - Forys, Edward Louis; Lofftus, Leroy A.; Malueg, Richard Milton; and Montalhano, Albert F., 3,703,999.
- Adams, James E.: *See—*
  - Wysocki, Joseph J.; Adams, James E.; and Madrid, Robert W., 3,704,056.
- Adjusta-Post Manufacturing Company: *See—*
  - Patry, Leon R., 3,704,368.
- Agence Katimavik Inc.: *See—*
  - Sollogoub, Nicolas; and Bloc, Jean A., 3,704,064.
- Agence Nationale de Valorisation de la Recherche: *See—*
  - Paris, Rene A.; Thibaudon, Dominique; Roubin, Marc P.; and Paris, Jacques M., 3,704,116.
- Airtex Corporation, mesne: *See—*
  - Beck, Edward G., Jr., 3,703,758.
- Aitkenhead, William C.: *See—*
  - Grunig, James K.; Davis, William B., and Aitkenhead, William C., 3,704,091.
- Ajax Magnethermic Corporation: *See—*
  - Synnestvedt, Don A., 3,704,336
- Ajinomoto Co., Inc.: *See—*
  - Hanaoka, Takemi; Kakehashi, Toshiro; Toyomasu, Ryota; and Yata, Tomio, 3,704,316.
  - Shiro, Teruo; Takinami, Koichi; Akutsu, Eiichi; Yoshii, Hiroe; and Yamada, Yasutsugu, 3,704,205.
  - Yamashita, Takashi; Chida, Yugo; Ninagawa, Sadayoshi; and Kato, Tetsuya, 3,704,317.
- Akahide, Kozo: *See—*
  - Saito, Tatsuo; Akahide, Kozo; and Ukebe, Teruo, 3,704,358.
- Akutsu, Eiichi: *See—*
  - Shiro, Teruo; Takinami, Koichi; Akutsu, Eiichi; Yoshii, Hiroe; and Yamada, Yasutsugu, 3,704,205.
- Alburn, Harvey E.: *See—*
  - Dvonch, William; and Alburn, Harvey E., 3,704,297.
  - Russell, Peter B.; Fletcher, Horace, III; and Alburn, Harvey E., 3,704,312.
- Allegheny Ludlum Industries, Inc.: *See—*
  - Stroble, Carl P., 3,704,118.
- Allen, Edward Merle, to PPG Industries, Inc. Production of caustic soda prills. 3,704,102, Cl. 23-302.000.
- Allied Chemical Corporation: *See—*
  - Bostian, Logan C., 3,704,112.
  - Twilley, Ian C.; Russell, William N.; and Peterson, Weldon H., 3,704,100.
- Allison, Hansel J.: *See—*
  - Hughes, William L.; Allison, Hansel J.; and Ramakumar, Ramachandra G., 3,703,976.
- Allmanna Svenska Elektriska Aktiebolaget: *See—*
  - Johansson, Bengt; and Nilsson, Erland, 3,704,388.
- Alpert, Seymour B., to Hydrocarbon Research Inc. Hydroconversion of waste natural and synthetic rubbers. 3,704,108, Cl. 44-62.000.
- Alps Electric Co., Ltd.: *See—*
  - Yanaga, Makoto, 3,704,356.
- Altemose, Harvey W.: *See—*
  - Slawek, Joseph E., Jr.; and Altemose, Harvey W., 3,704,375.
- American Cyanamid Company: *See—*
  - Beegle, Lindley Clair, 3,704,057.
  - Bollyky, Laszlo Joseph, 3,704,231.
  - Landi, Henry Patrick, 3,704,171.
  - Maulding, Donald Roy, 3,704,309.
  - Song, John, 3,704,326.
  - Stockel, Richard Frederick; and Herbes, William Frank, 3,704,325.
- American Home Products Corporation: *See—*
  - Dvonch, William; and Alburn, Harvey E., 3,704,297.
  - Hou, Joseph P.; and Poole, John W., 3,704,290.
  - Russell, Peter B.; Fletcher, Horace, III; and Alburn, Harvey E., 3,704,312.
  - Santilli, Arthur A.; and Kim, Havertown Dong H., 3,704,242.
  - Stein, Reinhardt P.; and Smith, Herchel, 3,704,253.
  - Wei, Peter H. L.; and Bell, Stanley C., 3,704,239.
  - Wei, Peter H. L.; and McCaully, Ronald J., 3,704,240.
  - Wei, Peter H. L., 3,704,303.
  - Wei, Peter H. L.; and Bell, Stanley C., 3,704,304.
  - Wolf, Milton; Diebold, James L.; and Bell, Stanley C., 3,704,291.
  - Wolfe, Milton; Diebold, James L.; Russell, Peter B.; and Bell, Stanley C., 3,704,292.
- AMP Incorporated: *See—*
  - Douglass, Frank Irvin, 3,704,441.
- Anaconda Astrodata Co.: *See—*
  - Rheinfelder, William A., 3,704,419.
- Anaconda Company, The: *See—*
  - Grunig, James K.; Davis, William B.; and Aitkenhead, William C., 3,704,091.
- Andersen, Viggo S.: *See—*
  - Woodruff, Edward T.; and Andersen, Viggo S., 3,704,169.
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- Aneja, Rajindra, to Lever Brothers Company. Process for separating phosphatides. 3,704,254, Cl. 260-403.500.
- Appelberg, Gustaf T., to Fairfield County Marine Inc. Tide indicator clock. 3,703,804, Cl. 58-3.000.
- Appenzeller, Valentin, to Kusters, Eduard, Maschinenfrik. Work pressure rolling assembly. 3,703,862, Cl. 100-162.00b.
- Aqua Treatment Industries, Inc.: *See—*
  - Feuer, Robert, 3,703,961.
- Armour and Company: *See—*
  - Heck, Joseph G.; and Hill, Warner M., 3,704,204.
- Armstrong, George W.; and Conrad, Siegfried E. Apparatus for making embossing plates for the blind. 3,703,950, Cl. 197-6.100.
- Arney, William C., Jr., to Union Carbide Corporation. Flame resistant latex and emulsion systems and the products formed therefrom. 3,704,273, Cl. 260-29.40r.
- Arnold, James F., to Hydro Tech Services, Inc. Connector for tubular members. 3,704,033, Cl. 285-18.000.
- Aronoff, Edward Israel. Method for treating tubular fabrics. 3,704,151, Cl. 117-7.000.
- Arrigo, Michael F.: *See—*
  - Galloway, Dwight V.; King, Gordon E.; Asbelle, Charles C.; and Arrigo, Michael F., 3,703,894.
- Artos Engineering Company: *See—*
  - Gudmestad, Ragnar, 3,703,954
- Arvin Industries, Inc.: *See—*
  - Thomason, Roger B., 3,704,422.
- Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
  - Kato, Masaaki; and Sato, Shigeta, 3,704,218.
- Asano, Hidejiro: *See—*
  - Nishihara, Toshiro; Asano, Hidejiro; Maeda, Shigeyoshi, and Oyagi, Yashichi, 3,704,181
- Asbelle, Charles C.: *See—*
  - Galloway, Dwight V.; King, Gordon E.; Asbelle, Charles C.; and Arrigo, Michael F., 3,703,894
- Ashworth, Robert H., to United States Steel Corporation. Apparatus for etching the surface of a metal workpiece. 3,704,220, Cl. 204-224.000.
- Atlas Copco Aktiebolag: *See—*
  - Schoeps, Knut Christian, 3,703,933.
- Atlas Pacific Engineering Company: *See—*
  - Loveland, Malcolm W.; and Singleton, Robert J., 3,704,041.
- August Thyssen-Hutte AG: *See—*
  - Preinfalk, Franz; and Meuters, Gunther, 3,703,943
- Ault, Cyrus Frank; Reed, Ray Allen, and Reichert, William George, Jr., to Bell Telephone Laboratories, Incorporated Transistor-transistor logic clipping circuit. 3,704,383, Cl. 307-237.000.
- Australian Atomic Energy Commission: *See—*
  - Reeve, Keith Desmond; and Ramm, Eric John, 3,704,202.
- Automobiles Peugeot: *See—*
  - Bailleux, Gilles, 3,704,029
  - Fournter, Roger, 3,704,213.
  - Pillot, Maurice; and Kilian, Louis, 3,703,847.
  - Slehofer, Ladislav, 3,704,379.
- Autrflug GmbH: *See—*
  - Peabe, Peter, 3,703,749.
- Avco Corporation: *See—*
  - Oomen, Johannes A. F., 3,704,409.
- AVM Corporation: *See—*
  - Harter, Robert M., 3,704,003
- B. & S. Massey Limited: *See—*
  - Wilson, Geoffrey, 3,703,823.
- Backus, James H. Fastening device 3,703,757, Cl. 29-200.00p.
- Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
  - Fischer, Adolf; Becke, Friedrich; and Kohlhaupt, Reinhold, 3,704,310.
  - Hartmann, Hans Joerg; Schnell, Georg; Werst, Gerhard; Grosselfinger, Horst; Hartmann, Job-Werner; and Bipp, Hansjoerg, 3,704,152.
- Badovinac, Peter. Posture earrings. 3,703,878, Cl. 116-67.000.
- Bahlo, Jurgen F., to General Felt Industries, Inc., mesne. Removable floor covering. 3,704,197, Cl. 161-67.000.

- Bailleux, Gilles, to Automobiles Peugeot and Regie Nationale des Usines Renault. Rear wheel arrangement having trailing arms for an automobile vehicle. 3,704,029, Cl. 280-124.00r.
- Bangor Punta Operations, Inc.: *See—*
  - Barker, Maynard C., 3,703,953.
- Barbarin, Jean-Francois; and Beaumatin, Jacques, to Etat Francais. Seal assembly. 3,704,021, Cl. 277-180.000.
- Barber-Colman Company: *See—*
  - Meyers, Elwood J.; and Falk, Earl J., 3,704,077.
- Bardwell, Francis G.; Dobrauz, John W.; and Sobchak, Frank L., to Stewart-Warner Corporation. Scanning head arrangement having servo motor armature secured to shaft on which photocell is carried. 3,704,373, Cl. 250-202.000.
- Barker, Maynard C., to Bangor Punta Operations, Inc. Conveying arrangement for containers. 3,703,953, Cl. 198-162.000.
- Barnes Engineering Company: *See—*
  - Slawek, Joseph E., Jr.; and Altemose, Harvey W., 3,704,375.
- Barouh, Victor; and Glenn, Robert. Correction material having visual aligning means. 3,704,150, Cl. 117-2.0tc.
- Barozzi, Gian Piero; and Horeschi, Giancarlo, to Citizen Watch Co., Ltd. Setting carriage return mechanism. 3,703,986, Cl. 235-60.00r.
- Barrat, Bernard, to Productions Essemes S.A. Decreasing flexibility aperiodic resilient device for floors, partition walls and like building members. 3,703,793, Cl. 52-403.000.
- Barrevecchia, Domenick P. Collapsible portable utility tray stand. 3,703,872, Cl. 108-111.000.
- Barry, George H., to United States of America, Navy, mesne. Direction finding antenna system. 3,704,463, Cl. 343-100.00r.
- Barry, James D.; and Boney, William E., III., to United States of America, Air Force. Carbon monoxide laser from helium-air-methane mixture. 3,704,428, Cl. 331-94.500.
- Barta, Cestmir, to Ceskoslovenska akademie ved. Method of preparing single crystals of mercurous chloride. 3,704,103, Cl. 23-305.000.
- Bauer, Friedrich; and Kohler, Robert, to Hoerbiger Ventilwerke Aktiengesellschaft. Plate valve. 3,703,912, Cl. 137-514.000.
- Baurle, Herbert F.: *See—*
  - Masak, Raymond J.; and Baurle, Herbert F., 3,704,465.
- Bawa, Mohendra S.; and Thur, Donald O., to Texas Instruments, Incorporated. Process for the production of trichlorosilane. 3,704,104, Cl. 423-342.000.
- Bayer Aktiengesellschaft: *See—*
  - Lepold, Manfred F.; Heinze, Gerhard; Kaule, Gustav; and Podschus, Ernst, 3,703,797.
  - Mader, Rudolf Mayer; and Schwinum, Ernst, 3,704,283.
  - Muller, Karl-Heinz; Rohr, Harry; and Ott, Karl-Heinz, 3,704,071.
- Bayerlein, Friedrich J.: *See—*
  - Stark, Adolf F.; Kolbeck, Winfried; and Bayerlein, Friedrich J., 3,704,318.
- Bayew, Dimiter; Daeuble, Manfred; Kaufmann, Otto; Ludsteck, Dieter; Pfitzner, Helmut; and Witsch, Heinz-Guenter. Production of highly concentrated, stable stock solutions containing 1:2 metal complex dyes in a single step reaction. 3,704,086, Cl. 8-42.000.
- Beacon, Robert G., to Ellcon-National, Inc. Braking mechanism. 3,704,046, Cl. 303-22.
- Beale, Julian Robert Anthony, to U.S. Philips Corporation. Methods of manufacturing a semiconductor device. 3,704,177, Cl. 148-1.500.
- Beatrice Foods Co.: *See—*
  - Young, Edward G.; and Heggem, Howard W., 3,703,739.
- Beaumatin, Jacques: *See—*
  - Barbarin, Jean-Francois; and Beaumatin, Jacques, 3,704,021.
- Beausoleil, William F.; Brown, David T.; and Clark, William A., to International Business Machines Corporation. Shift register storage unit. 3,704,452, Cl. 340-172.500.
- Beck, Edward G., Jr., to Airtex Corporation, mesne. Apparatus for securing an elongated metal member to a flat metal sheet. 3,703,758, Cl. 29-202.000.
- Beck, Eugene E. Essential oil composition and method of preparing the same. 3,704,137, Cl. 99-140.00r.
- Beck, Nicholas R.: *See—*
  - Hale, Douglas; Manuel, James C.; and Beck, Nicholas R., 3,704,135.
- Becke, Friedrich: *See—*
  - Fischer, Adolf; Becke, Friedrich; and Kohlhaupt, Reinhold, 3,704,310.
- Beckers, Heinrich: *See—*
  - Blattry, Johann; and Beckers, Heinrich, 3,704,022.
- Beegle, Lindley Clair, to American Cyanamid Company. Electrochromic device having identical display and counter electrode materials. 3,704,057, Cl. 350-160.000.
- Beezer, Earl F. Device for transmitting control translatory movements. 3,703,834, Cl. 74-57.000.
- Bell, Stanley C.: *See—*
  - Wei, Peter H. L.; and Bell, Stanley C., 3,704,239.
  - Wei, Peter H. L.; and Bell, Stanley C., 3,704,304.
  - Wolf, Milton; Diebold, James L.; and Bell, Stanley C., 3,704,291.
  - Wolfe, Milton; Diebold, James L.; Russell, Peter B.; and Bell, Stanley C., 3,704,292.
- Bell Telephone Laboratories, Incorporated: *See—*
  - Ault, Cyrus Frank; Reed, Ray Allen; and Reichert, William George, Jr., 3,704,383.
  - Coker, Cecil Harold; and Umeda, Noriko, 3,704,345.
  - Garrison, Jedediah Lyman; and Georgiades, Andrew Nicholas, 3,704,433.
  - O'Brien, Kevin C., 3,704,410.
  - Walsh, Edward G., 3,704,045.
  - Westerman, George Raymond, 3,704,430.
- Bendix Corporation, The: *See—*
  - Hickner, George B.; Howard, Donald W.; Houseman, Paul S.; and Carp, Ralph W., 3,704,043.
  - Kadron, Stanley F.; Eisenhauer, Gary L.; Pryor, David J.; and Chacon, Raul J., 3,704,423.
  - Schauffler, David J., 3,703,831.
- Benedikter, Kurt: *See—*
  - Schafer, Johannes; Berg, Gerhard; and Benedikter, Kurt, 3,704,286.
- Benson Industries Limited: *See—*
  - Benson, Russell Richard, 3,703,970.
- Benson, Russell Richard, to Benson Industries Limited. Apparatus for treating waste material. 3,703,970, Cl. 241-241.000.
- Bentley Engineering Company Limited, The: *See—*
  - Townsend, Keith Gerald; and Harlow, David Arthur, 3,703,819.
- Berg, Gerhard: *See—*
  - Schafer, Johannes; Berg, Gerhard; and Benedikter, Kurt, 3,704,286.
- Berg, Kjell Willy, to Haldex Aktiebolag. Taximeter arrangements. 3,703,985, Cl. 235-30.00r.
- Berger, Abe; and Lewis, Frederick M., to General Electric Company. Preparation of silicon hydrides. 3,704,261, Cl. 260-448.0ze.
- Berger, Carl. Solid electrolyte device. 3,704,174, Cl. 136-153.000.
- Berger, Herbert; Gall, Rudi; Merdes, Hartmut; Stach, Kurt; Voemel, Wolfgang; and Sauer, Winfriede, to Boehringer Mannheim GmbH. 4-(5-nitrofuryl) pyrimidines. 3,704,301, Cl. 260-251.00r.
- Berlyn, Martin John. Air compressors. 3,704,079, Cl. 417-438.000.
- Berry, Currie B., to Ethyl Corporation. Method of making a composite metal article. 3,703,763, Cl. 29-503.000.
- Berry, Foster W., to Brunswick Corporation. Bowling pin with cheek elements formed of wood particles and resin binder. 3,704,016, Cl. 273-82.00r.
- Bertelsen, Henry Filso. Table extension. 3,703,871, Cl. 108-66.000.
- Bertram, Sidney, to Bunker-Ramo Corporation, The, mesne. Light modulating device controlled by a divertable fluid stream. 3,704,058, Cl. 350-160.000.
- Bertram, Sidney, to Bunker-Ramo Corporation, The, mesne. Switchable light modulating device. 3,704,059, Cl. 350-160.000.
- Bien, Hans-Samuel; Hohmann, Walter; Vollmann, Heinrich; and Heinrich, Leister, to Farbenfabriken Bayer Aktiengesellschaft. Anthraquinone dyes. 3,704,252, Cl. 260-380.000.
- Bill, David H. Wall structure. 3,703,792, Cl. 52-242.000.
- Binford, Jack C.; Ethridge, Frederick A.; and Talbot, James R., to Fiber Industries, Inc. Method for producing a bulked yarn and apparatus therefor. 3,703,753, Cl. 28-72.120.
- Bio-Medical Sciences, Inc.: *See—*
  - Kolby, Mark J.; and Goldbach, Henry T., 3,704,362.
- Bipp, Hansjoerg: *See—*
  - Hartmann, Hans Joerg; Schnell, Georg; Werst, Gerhard; Grosselfinger, Horst; Hartmann, Job-Werner; and Bipp, Hansjoerg, 3,704,152.
- Birjukov, Dmitry Anatolievich: *See—*
  - Kusovsky, Boris Isaakovich; Pavlov, Nikolai Ivanovich; Matiichenko, Anatoly Petrovich; Zakharov, Sergei Alexandrovich; and Birjukov, Dmitry Anatolievich, 3,704,222.
- Blackman, Arthur W.: *See—*
  - Kuehl, Donald K.; Blackman, Arthur W.; and Glassman, Irvin, 3,704,184.
- Blackwell, Wayne Waldo; Earle, John Goodell; O'Connell, John Joseph; Pierce, Edwin Bruce; and Shabe, John Edward, to International Business Machines Corporation. Catenated files. 3,704,453, Cl. 340-172.500.
- Blanc, Charles; and Joly, Jean, to Societe Rhodiaceta. Process for producing textured thermoplastic yarns. 3,703,754, Cl. 28-72.140.
- Blane, Henry R., to Sperry Rand Corporation. Pulse-to-pulse instantaneous automatic gain control circuit. 3,704,421, Cl. 325-408.000.
- Blattry, Johann; and Beckers, Heinrich, to Forkardt, Paul, Kommanditgesellschaft. Chuck for turning machines. 3,704,022, Cl. 279-121.000.
- Bleikamp, Roy H., Jr., to United States of America, Air Force. Arming unit. 3,703,844, Cl. 89-1.50d.
- Blevins, Maurice E. Method of translating the location of a predetermined position on one side of a substantially nonferrous structural barrier of a building to an opposite side of said barrier. 3,704,413, Cl. 324-67.000.
- Bloc , Jean A.: *See—*
  - Sollogoub, Nicolas; and Bloc , Jean A., 3,704,064.
- Bloom, Ray Albert: *See—*
  - Whisler, Howard E.; Shah, Bhupendra Umedchand; Jeskey, Gerald Vernon; and Bloom, Ray Albert, 3,703,924.
- Bloom, Stanley M.: *See—*
  - Land, Edwin H.; Bloom, Stanley M.; and Farney, Leonard C., 3,704,126.
- Blumenthal, B., & Co., Inc.: *See—*
  - Pommer, Edwin B., 3,703,760.
- Bockmann, Walter, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of benzoyl chloride and benzotrichloride using light. 3,704,215, Cl. 204-163.00r.
- Bockstiegel, Georg Heinrich Artur Gerhard: *See—*
  - Wastenson, Erik Goran; and Bockstiegel, Georg Heinrich Artur Gerhard, 3,704,115.
- Bodanszky, Miklos, to Squibb, E. R., & Sons, Inc. Amino acid derivatives. 3,704,246, Cl. 260-333.000.

- Bodig, Bernd; Sohner, Gerhard; and Strelow, Gert, to Bosch, Robert, GmbH. Ignition arrangement for internal combustion engines. 3,703,889, Cl. 123-148.00e.
- Bodunov, Igor Vasilievich; Modestov, Boris Sergeevich; and Ivanchenko, Viktor Vasilievich, to Severodonetsky Filial Niihimmash. Screw feeder for paste-like materials. 3,704,076, Cl. 415-72.000.
- Boehringer Mannheim GmbH: *See—*
  - Berger, Herbert; Gall, Rudi; Merdes, Hartmut; Stach, Kurt; Voemel, Wolfgang; and Sauer, Winfriede, 3,704,301.
- Boeing Company, The: *See—*
  - Wright, Charles P., 3,704,442.
- Bogue Electric Manufacturing Company: *See—*
  - Herbst, John A., 3,704,414.
- Bollyky, Laszlo Joseph, to American Cyanamid Company. Chemiluminescent additives. 3,704,231, Cl. 252-188.300.
- Boney, William E., III.: *See—*
  - Barry, James D.; and Boney, William E., III., 3,704,428.
- Boone, Christopher B. Screwless terminal fuse box. 3,704,438, Cl. 339-95.00d.
- Boothe airside Services, Inc., mesne: *See—*
  - Eggert, Walter S., Jr., 3,703,737.
- Borner, Alfred. Household utensils. 3,703,918, Cl. 83-425.300.
- Bosch, Robert, GmbH: *See—*
  - Bodig, Bernd; Sohner, Gerhard; and Strelow, Gert, 3,703,889.
  - Eckert, Konrad; and Knapp, Heinrich, 3,703,888.
- Bostian, Logan C., to Allied Chemical Corporation. Trisubstituted-s-triazine chloroacetaldehyde adducts useful as herbicides 3,704,112, Cl. 71-93.000.
- Boultinghouse, Ace: *See—*
  - Procop, Alex J.; and Boultinghouse, Ace, 3,704,065.
- Bourns, Inc.: *See—*
  - Froebe, Ronald L.; and Hatch, Howard H., 3,704,436.
- Bowden, Roy Dennis, to Imperial Chemical Industries Limited. Process for producing 4, 4'-bipyridyl from 4,4'-bi (4h) pyran or 4,4'-bipyrylene by ammoxidation. 3,704,238, Cl. 260-296.00d.
- Bowen, William W., to Du Pont de Nemours, E. I., and Company. Yarn treating jet. 3,703,751, Cl. 28-1.400.
- Bower, Barton K., to Hercules Incorporated. Tris(bicycloheptyl)chromium. 3,704,259, Cl. 260-438.50r.
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- Boxer, Robert W.: *See—*
  - Boxer, Leo M.; and Boxer, Robert W., 3,703,974.
- Braak, Edmund C., to Hercules Incorporated. Protective surface covering having heat and moisture resistant properties for caseless ammunition. 3,703,868, Cl. 102-103.000.
- Brace, Lloyd D., Jr.: *See—*
  - Sims, John C., Jr.; and Brace, Lloyd D., Jr., 3,704,337.
- Bradford, John Ramsey, to Magnacheck Corporation. Micro imprinting photo-etched credit card. 3,703,864, Cl. 101-369.000.
- Bradley, Curtis E. Corrosion resistant battery terminal connector. 3,704,440, Cl. 339-114.000.
- Branson, Charles D.; and Genbauffe, Francis S., to Robertshaw Controls Company. Oven control system. 3,703,988, Cl. 236-15.00a
- Braun Aktiengesellschaft: *See—*
  - Pietzonka, Helmut; and Schindler, Hans, 3,704,085.
- Braun, Robert A., to Du Pont de Nemours, E. I., and Company. Polyesters. 3,704,255, Cl. 260-404.800.
- Brelsford, John E.: *See—*
  - Greiner, James G.; and Brelsford, John E., 3,704,028.
- Bright, William L. Tension brake assembly for stringing conductors. 3,703,980, Cl. 226-90.000.
- Brockmuller, Friedrich Franz, to Windmoller & Holscher. Apparatus for transferring workpieces which are intended for the manufacture of bags. 3,703,951, Cl. 198-20.00t.
- Brode, W. M., Company, The: *See—*
  - MacKinnon, Alan G., 3,703,857.
- Brokke, Mervin E.: *See—*
  - Tilles, Harry; and Brokke, Mervin E., 3,704,236.
- Brooshooft, Thomas: *See—*
  - De Boer, Henri G. J.; Brooshooft, Thomas; and Wemmers, Anton, 3,704,129.
- Brown, David, Gear Industries Limited: *See—*
  - Chesters, Walter T., 3,703,756.
- Brown, David T.: *See—*
  - Beausoleil, William F.; Brown, David T.; and Clark, William A., 3,704,452.
- Brown Engineering Company, Inc., mesne: *See—*
  - McLain, John H.; and Porter, Bobby J., 3,704,165.
- Brown, Frederick L., to Dow Chemical Company, The. Condensation resins from aldehydes, polynuclear catechol and resorcinol. 3,704,200, Cl. 161-262.000.
- Brown, John P., to United States of America, Air Force. Gel composition and its use as a braking medium. 3,703,942, Cl. 188-33.000.
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- Brown, William B. Pressure sensitive apparatus. 3,703,782, Cl. 43-23.000.
- Brown, William L., IV. Fluid pressure engine. 3,703,848, Cl. 91-265.000.
- Brunswick Corporation: *See—*
  - Berry, Foster W., 3,704,016.
- Buchanan, Wilbert Bernard: *See—*
  - Buchanan, Wilbert Bernard; and Haws, Leon, 3,704,458.
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- Bucher, Robert W., to Goodyear Tire & Ruhber Company, The. Method of making a high strength fitting for a flexible wall container 3,704,190, Cl. 156-74.000.
- Budd Company, The: *See—*
  - MacKinney, John J., 3,704,175.
- Budnowski, Manfred: *See—*
  - Saran, Herbert; and Budnowski, Manfred, 3,704,281.
- Buffleb, Herbert; Franck, Heinz-Gerhard; Turowski, Johannes; deceased (by Turowski, Else Paula Maria; heir); Collin, Gerd; and Zander, Maximilian, to Rutgerswerke Aktiengesellschaft. Process for the production of anthracene. 3,704,331, Cl. 260-675.
- Bullard, Edwin R., Jr.; and Joosten, Wesley L., to Globe Universal Sciences, Inc. Capacitance variometer 3,703,828, Cl. 73-179.
- Bunker-Ramo Corporation, The, mesne: *See—*
  - Bertram, Sidney, 3,704,058.
  - Bertram, Sidney, 3,704,059.
- Buresh, Francis M.; Nisenson, Stanley M.; Lipscomb, Walter P.; and Saich, Anthony M. Non-woven process. 3,704,191, Cl. 156-148.000.
- Burg, Karlheinz; Wolters, Ernst; Cherdron, Harald; and Leugering, Hans-Joachim, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Thermoplastic moulding compositions on the basis of polyoxymethylenes. 3,704,275, Cl. 260-37.0al.
- Burke, Francis T. Brake testing tool. 3,703,826, Cl. 73-121.000.
- Burlingtrn Industries, Inc.: *See—*
  - Reid, James Paul, Jr.; and Deskins, David S., 3,703,773
- Burroughs Corporation: *See—*
  - Cola, Rudolph A., 3,704,386.
  - Mack, Ronald H.; Wilczewski, Robert H.; and Kondur, Nicholas, Jr., 3,703,948
- Burtis, Stokes Fenimore, to RCA Corporation. Process for forming an isolated circuit pattern on a conductive substrate. 3,704,207, Cl 204-15.000.
- Burton, Robert R.: *See—*
  - Boxer, Leo M.; and Boxer, Robert W., 3,703,974.
- Cairns, James Anthony; and Desborough, Colin Leonard, to United Kingdom Atomic Energy Authority. Detection for soft X-rays 3,704,371, Cl. 250-83.60r.
- California Institute of Technology: *See—*
  - Garmire, Gordon, 3,704,284.
- Calinog, Teodora A. Surgical drainage instrument. 3,703,899, Cl. 128-347.000.
- Callan, John E., to Cities Service Company. Self-curing sealant compositions. 3,704,196, Cl. 156-306.000.
- Callan, John E., to Cities Service Company. Method of increasing the scorch life of butyl rubber. 3,704,274, Cl 260-33.6aq
- Canadian Westinghouse Company Limited: *See—*
  - Parker, Robert E.; Lodge, Malcolm A., and Jewell, George S., 3,704,372.
- Canfield, Dale Kelley: *See—*
  - Soehngen, John William; Wagner, William Sherwood; Jamison, Saunders Eliot; and Canfield, Dale Kelley, 3,704,192.
- Canon Kabushiki Kaisha: *See—*
  - Goshima, Takeshi, 3,703,774.
  - Goshima, Takeshi; and Kohtani, Yutaka, 3,704,349.
  - Goshima, Takeshi; and Kohtani, Yutaka, 3,704,400.
- Capuano, Italo A., to Olin Corporation. Total mercury monitor 3,704,097, Cl. 23-230.00r.
- Carborundum Company, The: *See—*
  - Loricchio, Domingos, 3,704,230.
- Cardiac Resuscitator Corporation: *See—*
  - Holznagel, Melvin A., 3,703,900.
- Carp, Ralph W.: *See—*
  - Hickner, George B.; Howard, Donald W.; Houseman, Paul S., and Carp, Ralph W., 3,704,043.
- Carpenter, Mark E.; and Smithgall, Harry E., to GTE Sylvania Incorporated. Cathode ray tube target structure supported by the forward portion of the envelope and having a thermal barrier therein. 3,704,387, Cl. 313-257.000.
- Carrier Corporation: *See—*
  - Mayer, Robert H., 3,704,035.
- Carsten, Paul W., to CVC Company. Automatic rate of flow control valve. 3,703,913, Cl. 137-599.000.
- Carter, William J., Jr. Ground collar. 3,704,004, Cl. 256-1.000.
- Cartner, Jack O. Post driver. 3,703,934, Cl. 173-43.000.
- Cassidy, James L. Pressure process for condensing power house stream. 3,703,809, Cl. 60-95.000.
- Caterpillar Tractor Co.: *See—*
  - Karstensen, Karl W.; and Kizer, Richard W., 3,704,075.
  - Page, Russell D.; Klingaman, Dean C., and Scholl, Rolland D., 3,703,931.
- Cato Oil and Grease Co.: *See—*
  - Oswalt, Leon M., 3,703,956.
- CCI Aerospace Corporation: *See—*
  - Raymond, Julius R., 3,703,959.
- Cegedur GP: *See—*
  - Patrie, Jos, 3,704,209.
  - Patrie, Jos, 3,704,210.
- Celotex Corporation, The: *See—*
  - Piccola, Richard C., 3,704,212.
- Centronics Data Computer Corporation: *See—*

  - Howard, Robert; Robinson, Prentice I.; and Menhennett, Herbert E., 3,703,949.
- Cerveny, Daniel H.; Johnson, Perry T.; and Gaston, Donald H. Folding cart. 3,704,025, Cl. 280-41.00a.
- Ceskoslovenska akademie ved: *See—*
  - Barta, Cestmir, 3,704,103.
- Chacon, Raul J.: *See—*
  - Kadron, Stanley F.; Eisenhauer, Gary L.; Pryor, David J.; and Chacon, Raul J., 3,704,423.
- Chamberlain, Neal C.: *See—*
  - Kuhn, Kenneth G.; and Chamberlain, Neal C., 3,703,952.
- Chamberlin, Earl M.: *See—*
  - Czaja, Robert F.; Grenda, Victor J.; and Chamberlin, Earl M., 3,704,249.
- Charbonnages de France: *See—*
  - Courbon, Paul, 3,703,800.
- Chase, Wayne R.: *See—*
  - Ruf, Franz X.; Chase, Wayne R.; and Prell, Raymond A., 3,703,881
- Chemische Werke Huls, A.G.: *See—*
  - Schafer, Johannes; Berg, Gerhard; and Benedikter, Kurt, 3,704,286.
- Chen, Muchuan M.; and Kotheimer, William C., to General Electric Company. Network reclosing relay. 3,704,392, Cl. 317-23.000.
- Cherdron, Harald: *See—*
  - Burg, Karlheinz; Wolters, Ernst; Cherdron, Harald; and Leugering, Hans-Joachim, 3,704,275.
- Chesters, Walter T., to Brown, David, Gear Industries Limited. Method of producing wormwheels. 3,703,756, Cl. 29-159.200.
- Chida, Yugo: *See—*
  - Yamashita, Takashi; Chida, Yugo; Ninagawa, Sadayoshi; and Kato, Tetsuya, 3,704,317.
- Cincinnati Butchers' Supply Company, The: *See—*
  - Schmidt, Carl Oscar, Jr., 3,703,743.
- Cincinnati Incorporated: *See—*
  - MacDonald, John L., 3,704,396.
- Cities Service Company: *See—*
  - Callan, John E., 3,704,196
  - Callan, John E., 3,704,274.
- Cities Service OiCompany: *See—*
  - Fulford, Richard S., 3,703,928
- Cities Service Oil Company: *See—*
  - El-Mogazi, Mohamed M.; and Rai, Charanjit, 3,704,330.
  - Harry, Robert Y., 3,703,927.
- Citizen Watch Co., Ltd.: *See—*
  - Barozzi, Gian Piero; and Horeschi, Giancarlo, 3,703,986.
- Claassen, Peter J.M W.: *See—*
  - Van Der Loos, Jozef L. M.; and Claassen, Peter J.M.W., 3,704,280.
- Claes, Frans Henri: *See—*
  - Pollet, Robert Joseph; Philippaerts, Herman Adelbert; Willems, Jozef Frans; and Claes, Frans Henri, 3,704,130
- Clark Equipment Company: *See—*
  - Williamson, William A., 3,703,806.
- Clark, Frank S., to Monsanto Company. Polyphenyl ether lubricating compositions. 3,704,277, Cl. 252-54.600.
- Clark, William A.: *See—*
  - Beausoleil, William F.; Brown, David T.; and Clark, William A., 3,704,452.
- Clay, Robert A. Rotational molding apparatus. 3,704,084, Cl. 425-404.000.
- Clinton, Raymond O., to Sterling Drug Inc. Steroido[3,2-c]pyrazoles and preparation thereof. 3,704,295, Cl. 260-239.5.
- Coats, Jesse C. Combination lumber stacker, sticker placer and unloader. 3,703,965, Cl. 214-6.00m.
- Coffin, George, to Lucas, Joseph, (Industries) Limited. Testing of semi-conductor devices. 3,704,418, Cl. 324-158.00f.
- Cohen, Marvin P.: *See—*
  - Strandtmann, Maximilian Von; Cohen, Marvin P.; and Shavel, John, Jr., 3,704,234.
- Cohen, Ronald: *See—*
  - Stedman, James K.; and Cohen, Ronald, 3,704,172.
- Cohn, Nathan, to Leeds & Northrup Company. Load shedding apparatus. 3,704,380, Cl. 307-52.000.
- Coker, Cecil Harold; and Umeda, Noriko, to Bell Telephone Laboratories, Incorporated. Conversion of printed text into synthetic speech. 3,704,345, Cl. 179-1.0sa.
- Cola, Rudolph A., to Burroughs Corporation. Display panel and method of operating said pane to produce different colors of light output 3,704,386, Cl 313-108.00r.
- Cole, Judson C., to Continental Industries, Inc. Torque wrench. 3,703,827, Cl. 73-139.000
- Coleman, William E., to National Cash Register Company. Method of making a plasma display panel 3,704,052, Cl. 316-17.000.
- Colgate-Palmolive Company: *See—*
  - Inamorato, Jack Thomas, 3,703,2[illegible]
  - McHugh, Neil Martin; Scheurman, Terence, III; and Schulerud, Albert Lyle, 3,703,772
  - Suh, John T., 3,704,237.
- Collin, Gerd: *See—*
  - Buffleb, Herbert; Franck, Heinz-Gerhard; Turowski, Johannes; Collin, Gerd, and Zander, Maximilian, 3,704,331.
- Colonial Carbon Company: *See—*
  - Zitzler, Earl W.; and Ideboen, John, 3,704,195.
- Combustion Engineering Inc.: *See—*
  - Owens, Vincent P.; and Prohazka, George J., 3,703,919.
- Commatic Systems: *See—*
  - Smith, Lloyd M.; Scott, James B.; and Wertz, William H., 3,704,346.
- Commercial Solvents Corporation: *See—*
  - Hodge, Edward B., 3,704,248.
- Conant, Dale H., to Eastman Kodak Company. Diazo-containing material exhibits an imagewise change in triboelectric charging properties. 3,704,124, Cl. 96-1.00r.
- Cone, Richard E.: *See—*
  - Landis, Donald E.; Sidhu, Mohanjit S.; and Cone, Richard E., 3,703,903.
- Conery, William J.; and Kaessen, Donald A., to Hydr-O-Matic Pump Company. Deep well type pump. 3,704,078, Cl. 417-369.000.
- Confer, Howard F. Protection apparatus for a vehicle. 3,704,031, Cl. 280-150.00c.
- Conrad, Siegfried E.: *See—*
  - Armstrong, George W.; and Conrad, Siegfried E., 3,703,950.
- Continental Industries, Inc.: *See—*
  - Cole, Judson C., 3,703,827.
- Continental Oil Company: *See—*
  - Neuworth, Martin B., 3,704,327.
  - Spangler, Carl D., Jr.; Radd, Frederick J.; and Wolfe, Louis H., 3,704,333.
  - Washecheck, Paul H.; and Starks, Charles M., 3,704,319.
- Continental Scale Corporation: *See—*
  - Hutchinson, William Y.; and Kushmuk, Walter P., 3,703,935.
- Control Technology, Inc.: *See—*
  - Kaufman, Theodore Phillip, 3,704,374.
- Converso, Victor E. Recessible fixture support. 3,703,855, Cl. 94-1.500.
- Cooner, William W., to Du Ponte de Nemours, E. I., and Company. Progressive burning smokeless powder coated with an organic ester. 3,704,185, Cl. 149-11.000.
- Corti, Costante: *See—*
  - Sianesi, Dario; Pasetti, Adolfo; and Corti, Costante, 3,704,214.
- Cotton, Incorporated: *See—*
  - Jones, Joseph Kennedy; and Smith, Milton Louis, 3,703,966.
- Courbon, Paul, to Charbonnages de France. Humid de-dusting device for gas-conveyor conduits. 3,703,800, Cl. 55-238.000.
- Coyer, Robert D.; and Weigel, Robert M.; deceased (by Weigel, Virginia; heiress), to United States of America, Air Force. Survivable telescoping antenna. 3,704,466, Cl. 343-719.000.
- Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., to Merck & Co., Inc. (1-oxo-2-alkylideneindanyloxy) and (1-oxo-2-alkylideneindanylthio) alkanoic acids. 3,704,314, Cl. 260-520.000
- Crane Co.: *See—*
  - Kanter, Jerome J., 3,704,153.
- Crawford, Donald C., to FMC Corporation. Rotary shear for wrapping machines. 3,703,841, Cl. 83-341.000.
- Crawford, John T.: *See—*
  - Shaffer, Walter M.; and Crawford, John T., 3,703,969.
- Cross, Grosvenor M. Fluid engine. 3,704,080, Cl. 417-486.000.
- Crouch, Thomas J.; and Gynn, George E., to Syncro Corporation. Ignition adapter circuit. 3,704,397, Cl. 317-157.600.
- Cuomo, Jerome J.; Mayadas, Ashok F.; and Rosenberg, Robert, to International Business Machines Corporation. Method for improving adhesion between conductive layers and dielectrics. 3,704,166, Cl. 117-217.000.
- Cupler, John A., II. Vee machining center. 3,704,073, Cl. 408-1.000
- Curtis Instruments, Inc.: *See—*
  - Finger, Eugene P., 3,704,431.
  - Finger, Eugene P., 3,704,432.
- Cushman, Walton W., to Tucker, Martin. Vehicle suspension means. 3,704,026, Cl. 280-87.00r.
- CVC Company: *See—*
  - Carsten, Paul W., 3,703,913.
- Czaja, Robert F.; Grenda, Victor J.; and Chamberlin, Earl M., to Merck & Co., Inc. Synthesis of the biologically active diastereoisomer of (-) zearalanol. 3,704,249, Cl. 260-343.20f.
- Dadazynski, Rolf: *See—*
  - Nagel, Horst; Thumm, Wilhelm; Garbe, Horst; Dailey, William H.; Goedeke, Egon; and Dadazynski, Rolf, 3,704,088.
- Daeuble, Manfred: *See—*
  - Bayew, Dimiter; Daeuble, Manfred; Kaufmann, Otto; Ludsteck, Dieter; Pfitzner, Helmut; and Witsch, Heinz-Guenter, 3,704,086.
- Dahlgren, Lennart Gunnar Oskar, to Hasselblad, Fritz Victor. Cushioning device for mechanical details in photographic cameras and similar precision apparatus. 3,703,945, Cl. 188-85.000.
- Dailey, William H.: *See—*
  - Nagel, Horst; Thumm, Wilhelm; Garbe, Horst; Dailey, William H.; Goedeke, Egon; and Dadazynski, Rolf, 3,704,088.
- Daimler-Benz Aktiengesellschaft: *See—*
  - Van Winsen, Friedrick H.; and Daur, Hans-Karl, 3,703,761.
- Danfoss A/S: *See—*
  - Iversen, Kristian, 3,704,404.
- Danna, Vincent F.: *See—*
  - Walker, Bobby T.; and Danna, Vincent F., 3,703,781.
- Daughtry, Wallace B. Carriers frr cups, sandwiches and the like. 3,703,982, Cl. 229-28.000.
- Daur, Hans-Karl: *See—*
  - Van Winsen, Friedrick H.; and Daur, Hans-Karl, 3,703,761.

- Davis, Judson S., to General Motors Corporation. Vehicle speed indicator. 3,704,417, Cl. 324-163.000.
- Davis, Leo W.; Lackey, Marion D.; Ross, John Reuben; and Trenary, Bryant, to Peerless Mfg. Co. Vehicle for traversing rough terrain. 3,704,040, Cl. 298-17.00r.
- Davis, Noel, to Integrated Development and Manufacturing Co. Cold finger dehumidification system. 3,703,814, Cl. 62-95.000.
- Davis, William B.: *See—*
  - Grunig, James K.; Davis, William B.; and Aitkenhead, William C., 3,704,091.
- Dawson Carbide Industries: *See—*
  - Guensche, Oscar M., 3,703,755.
- Day, Donald R.: *See—*
  - Seovill, Warner E.; and Day, Donald R., 3,704,224.
- De Boer, Henri G. J.; Brooshooft, Thomas; and Wemmers, Anton, to GAF Corporation. Two component diazotype composition having additionally an aniline compound. 3,704,129, Cl. 96-91.00r.
- De Laval Turbine Inc.: *See—*
  - Rice, Ivan G., 3,703,807.
- De Lavel Separator Company, The: *See—*
  - Tholl, David M., 3,703,983.
- Dean, William H. Truck bed cover. 3,704,039, Cl. 296-137.00b.
- Debs, Victor, to Levolor Lorentren, Inc. Venetian blind, installation and method. 3,703,920, Cl. 160-107.000.
- Deckas, Peter C., to Dexon, Inc. Clean air work station. 3,703,801, Cl. 55-385.000.
- Delalande S.A.: *See—*
  - Fauran, Claude P.; Turin, Michel J.; Raynaud, Guy M.; and Pourrias, Bernard M., 3,704,305.
- Delong, William T.; Szumachowski, Edwin R.; and Heverly, Harold R. Liquid binding agent for bonded arc welding flux. 3,704,149, Cl. 106-286.000.
- Delta Products, Inc.: *See—*
  - Schweitzer, John C.; and Junak, Edward M., 3,704,385.
- Demag AG: *See—*
  - Lichtenvort, Uwe; Kluge, Johannes; and Schleyer, Meinolf, 3,704,355.
- Demchyshyn, Bohdan: *See—*
  - Holovka, Charles, Jr.; Demchyshyn, Bohdan, and McHugh, John Francis, 3,704,015.
- Dennert, Hans Veit: *See—*
  - Dennert, Heinz; and Dennert, Hans Veit, 3,704,010.
- Dennert, Heinz; and Dennert, Hans Veit. Method and apparatus for expanding clay granules. 3,704,010, Cl. 263-21.00b.
- Desborough, Colin Leonard: *See—*
  - Cairns, James Anthony; and Desborough, Colin Leonard, 3,704,371.
- Deschner, Richard E. Offset feed control. 3,704,074, Cl. 408-11.000.
- Deskins, David S.: *See—*
  - Reid, James Paul, Jr.; and Deskins, David S., 3,703,773.
- Dessauer, Rolf, to Du Pont de Nemours, E. I., and Company. Co-irradiation method for producing positive images utilizing phototropic spiropyran or indenone oxide or dual response photosensitive composition. 3,704,127, Cl. 96-48.000.
- Devellian, Richard D.: *See—*
  - Grout, Kenneth M.; and Devellian, Richard D., 3,704,006.
- Dexon, Inc.: *See—*
  - Deckas, Peter C., 3,703,801.
- Diamalt Aktiengesellschaft: *See—*
  - Stark, Adolf F.; Kolbeck, Winfried; and Bayerlein, Friedrich J., 3,704,318.
- Diamond, Julius, to Rorer, William H., Inc. P-cycloalkylphenylglycolic acid and derivatives therefor. 3,704,313, Cl. 260-520.000.
- Diamond Laboratories, Inc.: *See—*
  - Welter, Clarence J., 3,704,203.
- Diebold, James L.: *See—*
  - Wolf, Milton; Diebold, James L.; and Bell, Stanley C., 3,704,291
  - Wolfe, Milton; Diebold, James L.; Russell, Peter B.; and Bell, Stanley C., 3,704,292.
- Dietzsch, Hans-Joachim; and Dietzsch, Otto. Electrodialysis apparatus with capillary exchanger. 3,704,223, Cl. 204-301.000.
- Dietzsch, Otto: *See—*
  - Dietzsch, Hans-Joachim; and Dietzsch, Otto, 3,704,223.
- Digney, Frank J., Jr.; and Phinney, Earl M. Capacitor discharge type blasting machines. 3,704,393, Cl. 317-80.000.
- Dille, Kenneth L.: *See—*
  - Newman, Stanley R.; Von Allmen, Ronald W.; Dille, Kenneth L.; and Vermillion, Herbert E., 3,704,109.
- Dillon, Janus J., to Food Equipment, Inc. Fowl singeing system. 3,703,744, Cl. 17-11.000.
- Dixon, Rolland E.; and Sherk, Fred T., to Phillips Petroleum Company. Hydrocarbon conversion. 3,704,334, Cl. 260-683.430.
- Dobrauz, John W.: *See—*
  - Bardwell, Francis G.; Dobrauz, John W.; and Sobchak, Frank L., 3,704,373.
- Dorey, Albin E. Safety lock. 3,703,821, Cl. 70-38.00r.
- Dorval, Rodolphe A.: *See—*
  - Stoddard, James Fred; Orabona, Francis A.; and Dorval, Rodolphe A., 3,704,342.
- Dougherty, William R., to Honeywell Inc. Liquid quantity gaging system. 3,703,829, Cl. 73-290.00r.
- Douglass, Frank Irvin, to AMP Incorporated. Panel mounted electrical terminal. 3,704,441, Cl. 339-220.00t.
- Douty, Donald L., to United States Steel Corporation. Can end with banded seal slide. 3,703,979, Cl. 221-484.000.
- Dow Chemical Company, The: *See—*
  - Brown, Frederick L., 3,704,200.
  - Kott, Alan C.; Jankowiak, Erwin M.; and Lane, George A., 3,704,187.
  - Phillips, Prella M., 3,704,270.
  - Schrader, Paul G., 3,703,962.
- Downing, James Herbert: *See—*
  - McClincy, Richard Joseph; Downing, James Herbert; and Wilson, Benjamin Jrhn, 3,704,094.
  - Wilson, Benjamin John; McClincy, Richard J.; and Downing, James Herbert, 3,704,114.
- Downs, Dan Lloyd, to Minnesota Mining and Manufacturing Company. Ski with cut-resistant surface covering. 3,704,023, Cl. 280-11.131.
- Drane, Charles J., Jr.; and McIlvenna, John F., Jr., to United States of America, Air Force. Method of suppressing selected antenna radiation pattern side lobes while retaining maximum directive gain. 3,704,464, Cl. 343-100.01e.
- Du Pont de Nemours, E. I., and Company: *See—*
  - Bowen, William W., 3,703,751.
  - Braun, Robert A., 3,704,255.
  - Dessauer, Rolf, 3,704,127.
  - Holmes, David Alan, 3,704,272.
  - McDonald, John William, 3,704,157.
  - Milgram, Alvin A., 3,704,162.
  - Porter, Verleon Henry, 3,704,285.
- Du Pont de Nemours, E. I., and Company, mesne: *See—*
  - Foley, Edward F., Jr.; Tsai, Shan-Pu; and Zatorsky, William A., 3,704,156.
- Du Ponte de Nemours, E. I., and Company: *See—*
  - Cooner, William W., 3,704,185.
- Dudevoir, Wilfried G.: *See—*
  - Johnson, Philip M.; Dudevoir, Wilfried G.; and Northrup, Richard M., 3,704,070
- Dulat, Joseph, to United States Borax & Chemical Corporation Ceramic whiteware compositions comprising a borate flux. 3,704,146, Cl. 106-45.000.
- Dunks, Clifford M.; and McCaulay, James L., to Materials and Methods Limited. Process for the manufacture of nodular cast iron 3,703,922, Cl. 164-57.000.
- Dunlop Company Limited, The: *See—*
  - Osborne, Denis A. N.; Haines, Robert C.; and Kilshaw, John A., 3,703,824.
- Dvonch, William, and Alburn, Harvey E., to American Home Products Corporation. 7-(1,4-cycloh exadienylacylamido) cephalosporanic acids and related compounds. 3,704,297, Cl. 260-243.00c.
- Dynamit Nobel Aktiengesellschaft: *See—*
  - Ismail, Roshdy, 3,704,279.
- Dynarad, Inc.: *See—*
  - Stoddard, James Fred, Orabona, Francis A., and Dorval, Rodolphe A., 3,704,342.
- Dynatron Research Corporation. *See—*
  - Prahl, Helmut F.; and Hart, Frederick M., 3,704,271.
- Eagle-Picher Industries, Inc.: *See—*
  - Miller, Earl D., Jr.; and Kindy, Ronald J., 3,704,405.
- Earle, John Goodell: *See—*
  - Blackwell, Wayne Waldo; Earle, John Goodell; O'Connell, John Joseph; Pierce, Edwin Bruce, and Shabe, John Edward, 3,704,453.
- Eastman Kodak Company: *See—*
  - Conant, Dale H., 3,704,124.
- Ebara Infilco Kabushiki Kaisha: *See—*
  - Eguchi, Fusatoshi; Okamoto, Sohei; Yamaha, Mashio; Matsumoto, Nobuo; and Yokoyama, Minoru, 3,703,963.
- Eckert, George W.: *See—*
  - Schlicht, Raymond C.; Eckert, George W.; and Von Allmen, Ronald W., 3,704,107.
- Eckert, Hans-Werner; and Perner, Johannes Jurgen, to Henkel & Cie G.m.b.H. Washing agents containing a textile softener. 3,704,228, Cl. 252-117.000.
- Eckert, Konrad; and Knapp, Heinrich, to Bosch, Robert, GmbH. Device for the fuel quantity control in response to operational variables of an internal combustion engine. 3,703,888, Cl. 123-119.00r.
- Eckert, Paul: *See—*
  - Glanemann, Rudolf, 3,704,038.
- Edutek Systems Corporation: *See—*
  - Procop, Alex J.; and Boultinghouse, Ace, 3,704,065.
- Edwards, Everett. Method for preparing animals for slaughter 3,703,745, Cl. 17-45.000.
- Eggert, Walter S., Jr., to Boothe airside Services, Inc., mesne. Canopy apparatus. 3,703,737, Cl. 14-71.000.
- Eguchi, Fusatoshi; Okamoto, Sohei; Yamaha, Mashio; Matsumoto, Nobuo; and Yokoyama, Minoru, to Ebara Infilco Kabushiki Kaisha. Sludge hydroextractor. 3,703,963, Cl. 210-386.000.
- Eich, Eckart; and Rochelmeyer, Hans, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. O-Acyl-lysergols and process for preparing them. 3,704,233, Cl. 260-285.500.
- Eisai Co., Ltd.: *See—*
  - Kohda, Akihide; Kohno, Shigeharu; Takahashi, Tohru, and Sugimoto, Hachiro, 3,704,244.
- Eisenhauer, Gary L.: *See—*

  Kadron, Stanley F.; Eisenhauer, Gary L.; Pryor, David J.; and Chacon, Raul J., 3,704,423.
El-Mogazi, Mohamed M.; and Rai, Charanjit, to Cities Service Oil Company. Process for recovery of para-xylene from mixtures of meta and para-xylene. 3,704,330, Cl. 260-674.00a.
Electric Machinery Mfg. Company: *See—*
  Gillett, Jimmie Douglas, 3,704,403.
Electro Connective Systems, Inc.: *See—*
  Travis, Lawrence R., 3,704,164.
Electronic Arrays, Inc.: *See—*
  Mc Coy, Michael R.; and Walther, Terry R., 3,704,454.
Ellcon-National, Inc.: *See—*
  Beacon, Robert G., 3,704,046.
Elliott, Brian J.; and Staples, John L., to International Business Machines Corporation. Sequential sampling system. 3,704,416, Cl. 324-121.00r.
Elsenheimer, Charles W., to Prentice Corporation. Key holder. 3,703,822, Cl. 70-456.00b.
Emhart Corporation: *See—*
  Gerlach, John R., 3,704,036.
Enomoto, Koji: *See—*
  Ohie, Koichi; and Enomoto, Koji, 3,703,941.
Enomoto, Sigeharu; Sato, Katsunobu; and Suzuki, Goichi, to Sumitomo Chemical Co., Ltd. Certain cumarin quinazolinones. 3,704,302, Cl. 260-256.40q.
Epina, August P.; and Pearson, Paul O., to Storage Technology Corporation. Door construction in a magnetic tape drive system. 3,703,997, Cl. 242-182.000.
Erb, Brian Richard, to Hurtsteel Products Ltd. Drilling apparatus. 3,703,909, Cl. 137-318.000.
Erickson, Lennart G. Sprinkler irrigation apparatus and method. 3,703,990, Cl. 239-11.000.
Esso Research and Engineering Company: *See—*
  Prentice, James S., 3,704,198.
Ester, Wilhelm: *See—*
  Rindtorff, Ermbrecht, and Ester, Wilhelm, 3,704,329.
Etablissements Clin-Byla. *See—*
  Mousseron, Max J., 3,704,296.
Etat Francais: *See—*
  Barbarin, Jean-Francois; and Beaumatin, Jacques, 3,704,021.
Etat Francais represents par le Ministre charge de la Defense Nationale Delegation Ministerielle pour l' Armement: *See—*
  Lagofun, Guy Jean Theodore, 3,704,354.
Ethridge, Frederick A.: *See—*
  Binford, Jack C.; Ethridge, Frederick A.; and Talbot, James R., 3,703,753.
Ethyl Corporation: *See—*
  Berry, Currie B., 3,703,763.
  Hildreth, Clarence L., 3,704,113.
  Perilstein, Warren L., 3,704,105.
  Valdo, Alex R.; and Janes, Jerry M., 3,704,193.
Ethyl Crrporation: *See—*
  Valdo, Alex R.; and Sanderford, Freeman M., 3,704,117.
Ets J. J. Carnaud & Forges de Basse-Indre: *See—*
  Petit, Maurice; and Thomas, Georges, 3,704,140.
Eustis, William E. C.; and Howell, Wallace E., to Hedco, Inc. Snow precipitator. 3,703,991, Cl. 239-2.00s.
Fairfield County Marine Inc.: *See—*
  Appelberg, Gustaf T., 3,703,804.
Falk, Earl J.: *See—*
  Meyers, Elwood J.; and Falk, Earl J., 3,704,077.
Farbenfabriken Bayer Aktiengesellschaft: *See—*
  Bien, Hans-Samuel; Hohmann, Walter; Vollmann, Heinrich; and Heinrich, Leister, 3,704,252.
  Bockmann, Walter, 3,704,215.
  Zecher, Wilfried; Kuhle, Engelbert; and Holtschmidt, Hans, 3,704,307.
Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
  Burg, Karlheinz; Wolters, Ernst; Cherdron, Harald; and Leugering, Hans-Joachim, 3,704,275.
  Eich, Eckart; and Rochelmeyer, Hans, 3,704,233.
  Feess, Erich; and Ong, Sienling, 3,704,087.
Farm Automatic Feeding Limited: *See—*
  Slack, Vaughn H.; and Koens, Gilliaan Peter, 3,703,861.
Farmer, William M., to United States of America, Air Force. Electrostatic spatial filter for a high power laser. 3,704,053, Cl. 350-17.000.
Farney, Leonard C.: *See—*
  Land, Edwin H.; Bloom, Stanley M.; and Farney, Leonard C., 3,704,126.
Fauran, Claude P.; Turin, Michel J.; Raynaud, Guy M.; and Pourrias, Bernard M., to Delalande S.A. N-(α-Phenylpropyl)-n'-(substituted)-piperazines. 3,704,305, Cl. 260-268.00r.
Fay, Lawrence P.: *See—*
  Padwick, Herbert W.; and Fay, Lawrence P., 3,703,936.
Feess, Erich; and Ong, Sienling, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Alkylating agent neutralizing dialkyl-amine from dialkylaminoalkyl sulfone reactive dye in continuous acid resist printing and steaming. 3,704,087, C. 8-66.000.
Feistel, Robert B., Jr., to HSH, Inc. Earth scraper. 3,703,776, Cl. 37-9.000.
Feller, Fritz. Rotary piston internal combustion engines. 3,703,885, Cl. 123-8.110
Feuer, Robert, to Aqua Treatment Industries, Inc. Rotary biological flow-through filter. 3,703,961, Cl. 210-151.000.
Fiala, Ernst, to Wolf-Dieter Klink. Actuating means for inflating a vehicular crash-pad. 3,704,032, Cl. 280-150.0ab.
Fiber Industries, Inc.: *See—*
  Binford, Jack C.; Ethridge, Frederick A.; and Talbot, James R., 3,703,753.
  Steinmiller, William George, 3,704,160.
Field, Frank P. Shelf divider structure with loop and collar arrangement. 3,703,964, Cl. 211-184.000.
Findley, Thomas W.: *See—*
  Shone, Robert L.; and Findley, Thomas W., 3,704,256.
Finger, Eugene P., to Curtis Instruments, Inc. Coulometer controlled variable frequency generator. 3,704,431, Cl. 331-177.00r.
Finger, Eugene P., to Curtis Instruments, Inc. Capacitive coulometer improvements. 3,704,432, Cl. 331-183.000.
Finn, John B.; and Hudecek, Carl J. Electrically conductive surface. 3,704,110, Cl. 65-32.000.
Fiore, Jack C.; and Tennerstedt, M. Richard, to Motorola, Inc. Multi-band memory assembly. 3,704,424, Cl. 325-470.000.
Fischer, Adolf; Becke, Friedrich; and Kohlhaupt, Reinhold, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Chloral compounds. 3,704,310, Cl. 260-482.00c.
Fischer, John L.: *See—*
  Mack, Robert J.; and Fischer, John L., 3,703,897.
Flesch, Friedrich: *See—*
  Mattes, Heinz Otto; and Flesch, Friedrich, 3,703,790.
Fletcher, Horace, III. *See—*
  Russell, Peter B.; Fletcher, Horace, III; and Alburn, Harvey E., 3,704,312.
FMC Corporation: *See—*
  Crawford, Donald C., 3,703,841.
  Kalbskopf, Karl-Heinz, 3,704,009.
  Kuhn, Kenneth G.; and Chamberlain, Neal C., 3,703,952.
  Lind, Willard M., 3,703,762
  Lofstrand, Wilton S.; and Montgomery, John G. (said Lofstrand assor. to), 3,703,930.
  Wilson, Donald C., 3,704,139.
Foley, Edward F., Jr.; Tsai, Shan-Pu; and Zatorsky, William A., to Du Pont de Nemours, E. I., and Company, mesne. Catalyst solution for electroless plating on nonconductors. 3,704,156, Cl. 117-47.00a.
Fontaine, John G. Composite seat and switch. 3,704,352, Cl. 200-85.00r.
Food Equipment, Inc.: *See—*
  Dillon, Janus J., 3,703,744.
Forhro Design Corporation: *See—*
  Nercessian, Sarkis, 3,704,381.
Forkardt, Paul, Kommanditgesellschaft: *See—*
  Blattry, Johann; and Beckers, Heinrich, 3,704,022.
Forys, Edward Louis; Lofftus, Leroy A.; Malueg, Richard Milton; and Montalbano, Albert F., to Actron Industries, Inc. Wide band stabilizer. 3,703,999, Cl. 248-20.000.
Foster, John R.; and Hunt, Larry R., to Von Duprin, Inc. Torque resisting axle assembly. 3,703,741, Cl. 16-112.000.
Fournier, Roger, to Regie Nationale des Usines Renault and Automobiles Peugeot. Acid coppering bath. 3,704,213, Cl. 204-52.00r.
Franck, Heinz-Gerhard: *See—*
  Buffleb, Herbert; Franck, Heinz-Gerhard; Turowski, Johannes; Collin, Gerd; and Zander, Maximilian, 3,704,331.
Frank, Eli C.: *See—*
  Boxer, Leo M.; and Boxer, Robert W., 3,703,974.
Frank, Stanley William. Self-contained alarm lock with tamper-proof interlocked casing formed from extrusion. 3,704,460, Cl. 340-274.000.
Freake, Ronald; Gunter, Claude Ray; Haden, Billy Harper; and Mhatre, Nagesh Shamrao, to Miles Laboratories, Inc. Device for the detection of bacteria in aqueous fluids. 3,704,206, Cl. 195-127.000.
Freeman, Harlan G.; and Gillern, Maurice F., to Weyerhaeuser Company. Foams and process of making. 3,704,269, Cl. 260-2.50f.
Freisler, Erhard, to Ruti Machinery Works Ltd.; formerly Caspar Honegger. Roll arrangement for a textile machine. 3,703,914, Cl. 139-308.000.
Frey, James O.; Marshall, Harry L.; and Minnier, Henry B., to GTE Sylvania Incorporated. Preparation of sulfide phosphors. 3,704,232, Cl. 252-301.60s.
Freyermuth, Harlan B.; and Randall, David I., to GAF Corporation. N-(Substituted sulfonylmethyl)-2-pyrrolidinones. 3,704,243, Cl. 260-326.5sf.
Frock, Brian G., to National Cash Register Company, The. Reversible record and storage medium. 3,704,467, Cl. 346-1.000.
Froebe, Ronald L.; and Hatch, Howard H., to Bourns, Inc. Multi-wire potentiometer contact device. 3,704,436, Cl. 338-202.000.
Frossard, Jacques J.: *See—*
  Weber, Abraham; and Frossard, Jacques J., 3,704,250.
Fuji Photo Film Co., Ltd.: *See—*
  Honjo, Satoru; Watarai, Syu; and Ono, Hisatake, 3,704,119.
  Makino, Katsuo; Yamada, Yoshihiko; and Onozaki, Jun, 3,704,121.
  Makino, Katsuo; and Sawato, Iwao, 3,704,123.
  Tatsuta, Sumitaka; and Ueno, Wataru, 3,704,154.
  Yamamoto, Nobuo; and Kawaguchi, Hideo, 3,704,167.
Fujita, Hisaya: *See—*
  Yamanaka, Takashi; Miyauchi, Rinichi; Fujita, Hisaya; and Kaieda, Nobuo, 3,704,415.

Fujita, Mitsuo, to Victor Company of Japan, Limited. Color video signal recording and reproducing system. 3,704,341, Cl. 178-5.20r.
Fukino, Katsushige, to Nippon Electric Co., Ltd. Multi-emitter power transistor having emitter region arrangement for achieving substantially uniform emitter-base junction temperatures. 3,704,398, Cl. 317-235.00r.
Fulford, Richard S., to Cities Service OiCompany. Oil recovery utilizing acidic organic phosphate scale inhibitors. 3,703,928, Cl. 166-275.000.
Fyanes, Robert V. Board game apparatus. 3,704,018, Cl. 273-134.0ab.
GAF Corporation: *See—*
  De Boer, Henri G. J.; Brooshooft, Thomas; and Wemmers, Anton, 3,704,129.
  Freyermuth, Harlan B.; and Randall, David I., 3,704,243.
  Komor, Joseph A., 3,704,262.
  Strobel, Albert F.; and Whitehouse, Maynard L., 3,704,293.
Gall, Rudi: *See—*
  Berger, Herbert; Gall, Rudi; Merdes, Hartmut; Stach, Kurt; Voemel, Wolfgang; and Sauer, Winfriede, 3,704,301.
Gallo, Thomas: *See—*
  Hampton, Richard J.; Rolland, Jacques R.; and Gallo, Thomas, 3,704,131.
Galloway, Dwight V.; King, Gordon E.; Asbelle, Charles C.; and Arrigo, Michael F., to United States of America, Navy. Rigid foam polyurethane hand splint. 3,703,894, Cl. 128-77.000.
Ganter, Wolfgang; Otto, Heinz; and King, Josef, to Gebruder Junghans G.m.b.H. Electric timepiece with date dial. 3,703,805, Cl. 58-5.00r.
Garbe, Horst: *See—*
  Nagel, Horst; Thumm, Wilhelm; Garbe, Horst; Dailey, William H.; Goedeke, Egon; and Dadazynski, Rolf, 3,704,088.
Garmire, Gordon, to California Institute of Technology. X-ray position detector. 3,704,284, Cl. 250-83.60r.
Garofalo, Frank: *See—*
  Heitmann, William E.; and Garofalo, Frank, 3,704,180.
Garrison, Jedediah Lyman; and Georgiades, Andrew Nicholas, to Bell Telephone Laboratories, Incorporated. Band-elimination filter. 3,704,433, Cl. 333-72.000.
Gas council, The: *See—*
  Nicklin, Thomas, 3,704,095.
Gaston, Donald H.: *See—*
  Cerveny, Daniel H.; Johnson, Perry T.; and Gaston, Donald H., 3,704,025.
Gatti, Joseph. Football boots. 3,703,775, Cl. 36-2.5ag.
Gebruder Junghans G.m.b.H.: *See—*
  Ganter, Wolfgang; Otto, Heinz; and King, Josef, 3,703,805.
Genbauffe, Francis S.: *See—*
  Branson, Charles D.; and Genbauffe, Francis S., 3,703,988.
General Connectors Corporation: *See—*
  Shire, Harold; and Newman, Ira R., 3,704,034.
General Electric Company: *See—*
  Berger, Abe; and Lewis, Frederick M., 3,704,261.
  Chen, Muchuan M.; and Kotheimer, William C., 3,704,392.
  Harrier, Stanley C., 3,704,194.
  McHugh, James D., 3,704,019.
  Schlaudroff, Leo M., 3,703,854.
  Stearns, Eldon M., 3,703,808.
  Wynn, Michael J., 3,704,260.
General Felt Industries, Inc., mesne: *See—*
  Bahlo, Jurgen F., 3,704,197.
General Motors Corporation: *See—*
  Davis, Judson S., 3,704,417.
  Huntzinger, Gerald O., 3,704,382.
  Schroeder, Thaddeus, 3,704,408.
General Telephone Company of California: *See—*
  Brown, Robert Warren, 3,704,347.
Georgiades, Andrew Nicholas: *See—*
  Garrison, Jedediah Lyman; and Georgiades, Andrew Nicholas, 3,704,433.
Gerlach, John R., to Emhart Corporation. Thumb lever actuated latch operating device. 3,704,036, Cl. 292-167.000.
Gessler, Hans, to Schwabische Huttenwerke Gesellschaft mit beschrankter Haftung. Rotor arm for silo discharging devices. 3,703,967, Cl. 214-17.00d.
Geus, John W., to Stamicarbon N.V. Process for the preparation of permanently magnetizable mixed oxides containing iron. 3,704,226, Cl. 252-62.560.
Gevaert-Agfa N.V.: *See—*
  Pollet, Robert Joseph; Philippaerts, Herman Adelbert; Willems, Jozef Frans; and Claes, Frans Henri, 3,704,130.
Giannini, Mario, to Malesci S.A.S. Istituto Farmacobiologico. N-Alkyl-n'-(1-naphthoyl) ethylene diamines. 3,704,322, Cl. 260-558.00r.
GIB Precision Limited: *See—*
  Orwin, Olaf John Barclay, 3,703,817.
Gibb, Thomas B., Jr.: *See—*
  Wynstra, John; and Gibb, Thomas B., Jr., 3,704,268.
Gilbertson, Warren L.; Shelton, Everett T., Jr.; and Southall, Hobert M., to United States of America, Navy. Electronically controlled aimed blast warhead. 3,703,865, Cl. 102-56.000.
Gillern, Maurice F.: *See—*
  Freeman, Harlan G.; and Gillern, Maurice F., 3,704,269.
Gillett, Jimmie Douglas, to Electric Machinery Mfg. Company. Power supply circuit to simultaneously vary frequency and amplitude in a motor speed control. 3,704,403, Cl. 318-227.000.
Gillette Company, The: *See—*
  Nigro, Louis V., 3,703,994.
  Perry, Roger L., 3,703,764.
Girard, Peter F., to Teledyne Ryan Aeronautical Company. Drone aircraft with telescopic fuselage. 3,703,998, Cl. 244-13.000.
Girling Limited: *See—*
  Ingram, Brian; Harries, David A.; and Phoenix, Lancelot, 3,704,044.
Giuiuzza, Pietro, to O.M.C.S.A. Officine Meccaniche Cigardi S.p.A. Disconnect arrangement for multi-unit printing press. 3,703,863, Cl. 101-183.000.
Glaise, Rene, to U.S. Philips Corporation. Semiconductor device and circuit arrangement comprising the device. 3,704,399, Cl. 317-235.00r.
Glanemann, Rudolf, to Eckert, Paul. Negative pressure lift device. 3,704,038, Cl. 294-65.000.
Glassberg, Bernard. Articulated door protector. 3,704,037, Cl. 293-1.000.
Glassman, Irvin: *See—*
  Kuehl, Donald K.; Blackman, Arthur W.; and Glassman, Irvin, 3,704,184.
Glenn, Robert: *See—*
  Barouh, Victor; and Glenn, Robert, 3,704,150.
Globe Universal Sciences, Inc.: *See—*
  Bullard, Edwin R., Jr.; and Joosten, Wesley L., 3,703,828.
Goedeke, Egon: *See—*
  Nagel, Horst; Thumm, Wilhelm; Garbe, Horst; Dailey, William H.; Goedeke, Egon; and Dadazynski, Rolf, 3,704,088.
Goldbach, Henry T.: *See—*
  Kolby, Mark J.; and Goldbach, Henry T., 3,704,362.
Goldman, Allan. Translucent sign. 3,703,779, Cl. 40-135.000.
Gomez, Juan Francisco Zendejas. Permanent, safety, inner doors for freight cars. 3,703,787, Cl. 49-169.000.
Goodrich, B. F., Company, The: *See—*
  Varga, Richard S., 3,704,189.
Goodyear Tire & Rubber Company, The: *See—*
  Bucher, Robert W., 3,704,190.
Gorman, Jeremy W., to Loctite Corporation. Encapsulation of monomeric materials. 3,704,264, Cl. 252-316.000.
Goshen, Randal W.: *See—*
  Hamer, William J.; and Goshen, Randal W., 3,704,395.
Goshi Kaisha Yoshikawa Seimitsu Kohsakusho: *See—*
  Yoshikawa, Kengi; and Hayashi, Etsuo, 3,704,048.
Goshima, Takeshi, to Canon Kabushiki Kaisha. Magnetic recording reproducing device capable of automatic repetitive reproduction. 3,703,774, Cl. 35-35.00c.
Goshima, Takeshi; and Kohtani, Yutaka, to Canon Kabushiki Kaisha. Magnetic recording system. 3,704,349, Cl. 179-100.20r.
Goshima, Takeshi; and Kohtani, Yutaka, to Canon Kabushiki Kaisha. Apparatus for controlling the tension of a magnetic tape. 3,704,400, Cl. 318-6.000.
Gotshall, William W., to Marathon Oil Company. Process for the preparation of elastomeric composition containing methanol treated carbon black. 3,704,276, Cl. 260-41.50r.
Grace, W. R., & Co.: *See—*
  Ketley, Arthur Donald; Kehr, Clifton Leroy; and Touchette, Jennie Lee, 3,704,125.
  Woodruff, Edward T.; and Andersen, Viggo S., 3,704,169.
Gracon, Andrew; and Tinnerman, George A., said Gracon assor. to said Tinnerman, George A. Structural retainer clip. 3,703,794, Cl. 52-506.000.
Grahame, Frederick W. Combined capacitor-inductor reactor device having transformer characteristics. 3,704,390, Cl. 315-276.000.
Gravoki Systems Limited, mesne: *See—*
  Roberts, George Wavell, 3,703,852.
Gray, John C.: *See—*
  Yarlott, John M.; and Gray, John C., 3,703,842.
Green, Clifford L. Incinerator. 3,703,732, Cl. 4-131.000.
Greiner, James G.; and Brelsford, John E., to Sperry Rand Corporation. Farm wagon frame. 3,704,028, Cl. 280-106.00t.
Grenda, Victor J.: *See—*
  Czaja, Robert F.; Grenda, Victor J.; and Chamberlin, Earl M., 3,704,249.
Griew, David Charles Lambert. Small arms weapon and small arms ranges. 3,703,845, Cl. 89-134.000.
Griffiths, Leonard B.; and Shen, Yuan-Shou, to Mallory, P. R., & Co., Inc. Nickel-chromium-beryllium alloy. 3,704,182, Cl. 148-32.000.
Grosselfinger, Horst: *See—*
  Hartmann, Hans Joerg; Schnell, Georg; Werst, Gerhard; Grosselfinger, Horst; Hartmann, Job-Werner; and Bipp, Hansjoerg, 3,704,152.
Grossman, Sidney. Variable capacity broiling equipment. 3,704,141, Cl. 99-397.000.
Grout, Kenneth M.; and Devellian, Richard D., to Kenics Corporation. Dispersion production method. 3,704,006, Cl. 259-4.000.
Grunig, James K.; Davis, William B.; and Aitkenhead, William C., to Anaconda Company, The. Extraction of beryllium from ores. 3,704,091, Cl. 423-128.000.
GTE Sylvania Incorporated: *See—*
  Carpenter, Mark E.; and Smithgall, Harry E., 3,704,387.
  Frey, James O.; Marshall, Harry L.; and Minnier, Henry B., 3,704,232.
Gudmestad, Ragnar, to Artos Engineering Company. Conveyor system for wire like articles. 3,703,954, Cl. 198-179.000.

Guensche, Oscar M., to Dawson Carbide Industries. Adjustable tool holder for precisely repositioning reground cutter inserts. 3,703,755, Cl. 29s96.000.

Guerrini, Camillo. Journal lubricator. 3,704,049, Cl. 308-84.000.

Gunter, Claude Ray: *See*—
Freake, Ronald; Gunter, Claude Ray; Haden, Billy Harper; and Mhatre, Nagesh Shamrao, 3,704,206.

Gunvalson, Robert N. Boat mooring device. 3,703,875, Cl. 114-230.000.

Guthrie, Charles I. Rearview mirror device. 3,704,063, Cl. 350-302.000.

Gutmann, Alfred, Gesellschaft fur Maschinenbau: *See*—
Zeidler, Johannes, 3,703,789.

Gynn, George E.: *See*—
Crouch, Thomas J.; and Gynn, George E., 3,704,397.

Gyrex Corporation, mesne: *See*—
La Canfora, Peter S., 3,703,858.

Haden, Billy Harper: *See*—
Freake, Ronald; Gunter, Claude Ray; Haden, Billy Harper; and Mhatre, Nagesh Shamrao, 3,704,206.

Haft, Peter, to Knitting Specialty Machinery Corporation, mesne. Fabric handling apparatus. 3,703,882, Cl. 118-32.000.

Haggerty, John S.; and Wenckus, Joseph F., to Little, Arthur D., Inc. Method of synthesizing intermetallic compounds. 3,704,093, Cl. 423-299.000.

Hahn, Hans Helmut: *See*—
Pretorius, Victor; and Hahn, Hans Helmut, 3,703,798.

Haigh, Geoffrey T., to Particle Data Inc. Compression/expansion techniques for time varying signals. 3,704,425, Cl. 328-145.000.

Haines, Robert C.: *See*—
Osborne, Denis A. N.; Haines, Robert C.; and Kilshaw, John A., 3,703,824.

Haldex Aktiebolag: *See*—
Berg, Kjell Willy, 3,703,985.

Hale, Douglas; Manuel, James C.; and Beck, Nicholas R., to Ralston Purina Company. Method of preparing a fabricated skin from poultry meat and skin and product produced thereby. 3,704,135, Cl. 99-108.000.

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Halla, Richard C., to Teletype Corporation. Alternate action mechanism with magnetic latch cam follower biasing means. 3,704,353, Cl. 200-153.00j.

Hamer, William J.; and Goshen, Randal W. Aircraft electronic apparatus with supporting rack. 3,704,395, Cl. 317-120.000.

Hamman, Denver C., to Illinois Tool Works Inc. Molding clip. 3,703,747, Cl. 24-73.0hs.

Hampton, Richard J.; Rolland, Jacques R.; and Gallo, Thomas, to Ogilvie Flour Mills Company, Limited, The. Readily dispersible dry gluten product, processes for making it, and uses thereof. 3,704,131, Cl. 99-17.000.

Hanaoka, Takemi; Kakehashi, Toshiro; Toyomasu, Ryota; and Yata, Tomio, to Ajinomoto Co., Inc. Preparation of amino acids by hydrolysis of bacterial cells obtained by fermentation. 3,704,316, Cl. 260-527.00n.

Hand, John W.; Lockwood, Don L.; and Harris, Robert K., to Mintech Corporation. Discharge mechanism for shaft kiln. 3,704,011, Cl. 263-29.000.

Hanna Mining Company, The: *See*—
Sullivan, Paul G.; MacLeod, Kenneth H.; and Kempa, Joseph E., 3,703,995.

Hara, Kazuo; Samoto, Mistunobu; Sawai, Masanobu; and Nakamura, Shiro, to Teikoku Hormone Mfg. Co., Ltd. and Japan Chemurgy Co., Ltd. Process for the crystallization of glucose, fructose, or mixture of glucose and fructose. 3,704,168, Cl. 127-58.000.

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Hardway, Edward V., Jr., to Spearhead, Inc. Method and apparatus for determining work of breathing. 3,703,893, Cl. 128-2.080.

Hardy, Clarence James; and Holdoway, Michael Joseph, to United Kingdom Atomic Energy Authority. Fibrous inorganic materials. 3,704,147, Cl. 106-55.000.

Harlow, David Arthur: *See*—
Townsend, Keith Gerald; and Harlow, David Arthur, 3,703,819.

Harmon, Lewis G.: *See*—
Toy, William W., 3,704,062.

Harrier, Stanley C., to General Electric Company. Perforated reinforced plastic members and method for making. 3,704,194, Cl. 156-245.000.

Harries, David A.: *See*—
Ingram, Brian; Harries, David A.; and Phoenix, Lancelot, 3,704,044.

Harris, Robert K.: *See*—
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Harrison, Maurice Clark; and Vancil, Donald Otis, to Reynolds Metals Company. Manufacture of N F/A1F double salt. 3,704,092, Cl. 423-465.000.

Harry, Robert Y., to Cities Service Oil Company. Waterflood stabilization for paraffinic crude oils. 3,703,927, Cl. 166-272.000.

Hart, Frederick M.: *See*—
Prahl, Helmut F.; and Hart, Frederick M., 3,704,271.

Harter, Robert M., to AVM Corporation. Valve assembly with integral inlet tube and saddle. 3,704,003, Cl. 251-312.000.

Hartmann, Hans Joerg; Schnell, Georg; Werst, Gerhard; Grosselfinger, Horst; Hartmann, Job-Werner; and Bipp, Hansjoerg, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Magnetic recording media. 3,704,152, Cl. 117-235.000.

Hartmann, Job-Werner: *See*—
Hartmann, Hans Joerg; Schnell, Georg; Werst, Gerhard; Grosselfinger, Horst; Hartmann, Job-Werner; and Bipp, Hansjoerg, 3,704,152.

Hasselblad, Fritz Victor: *See*—
Dahlgren, Lennart Gunnar Oskar, 3,703,945.

Hatch, Howard H.: *See*—
Froebe, Ronald L.; and Hatch, Howard H., 3,704,436.

Hawaiian Sugar Planters Association: *See*—
Nickell, Louis G., 3,704,111.

Haws, Leon: *See*—
Buchanan, Wilbert Bernard; and Haws, Leon, 3,704,458.

Hayashi, Etsuo: *See*—
Yoshikawa, Kengi; and Hayashi, Etsuo, 3,704,048.

Hazeltine Corporation: *See*—
Masak, Raymond J.; and Baurle, Herbert F., 3,704,465.

Heatherwill Company: *See*—
Hunter, William Allan, 3,703,921.

Heberlein, Gustave E., Jr.: *See*—
Kussy, Frank W.; and Heberlein, Gustave E., Jr., 3,704,435.

Heck, Joseph G.; and Hill, Warner M., to Armour and Company. Test medium and method for the detection of salmonella. 3,704,204, Cl. 195-150.000.

Hedco, Inc.: *See*—
Eustis, William E. C.; and Howell, Wallace E., 3,703,991.

Heggem, Howard W.: *See*—
Young, Edward G.; and Heggem, Howard W., 3,703,739.

Heinrich, Leister: *See*—
Bien, Hans-Samuel; Hohmann, Walter; Vollmann, Heinrich; and Heinrich, Leister, 3,704,252.

Heinze, Gerhard: *See*—
Lepold, Manfred F.; Heinze, Gerhard; Kaule, Gustav; and Podschus, Ernst, 3,703,797.

Heitmann, William E.; and Garofalo, Frank, to Inland Steel Company Method for producing tough, high strength steel article. 3,704,180, Cl. 148-12.000.

Helasti, Olavi Erland. Method for making lignin containing groundwood by hydrolysis and alkali treatment of wood chips. 3,704,201, Cl. 162-19.000.

Held, Jimmy L.: *See*—
Uhrich, Richard W.; and Held, Jimmy L., 3,703,968.

Hendrickson, Paul G., to Kelsey-Hayes Company. Disk parking and service brake having servo action on parking brake only. 3,703,944, Cl. 188-72.200.

Henkel & Cie G.m.b.H.: *See*—
Eckert, Hans-Werner; and Perner, Johannes Jurgen, 3,704,228.
Saran, Herbert; and Budnowski, Manfred, 3,704,281.

Hennig, Ralph R.: *See*—
Smith, Avery B.; Hennig, Ralph R.; Kurtz, Abraham J.; and Pantchenko, Gregory, 3,704,098.

Henrick, Clive A.; and Siddall, John B., to Zoecon Corporation. Erol ether intermediates for juvenile hormones and analogs. 3,704,258, Cl. 260-410.90r.

Herbes, William Frank: *See*—
Stockel, Richard Frederick; and Herbes, William Frank, 3,704,325.

Herbst, John A., to Bogue Electric Manufacturing Company. Frequency meter. 3,704,414, Cl. 324-79.00d.

Hercules Incorporated: *See*—
Bower, Barton K., 3,704,259.
Braak, Edmund C., 3,703,868.
MacDuff, Richard, 3,704,188.

Heverly, Harold R.: *See*—
Delong, William T.; Szumachowski, Edwin R.; and Heverly, Harold R., 3,704,149.

Hewlett-Packard Company: *See*—
Osborne, Thomas E., 3,704,448.

Hexcel Corporation: *See*—
Taylor, Robert S., 3,704,090.

Heywang, Walter, to Siemens & Halske Aktiengesellschaft. Device for simulating emission of radiation from a diode. 3,704,427, Cl. 331-94.500.

Hickner, George B.; Howard, Donald W.; Houseman, Paul S.; and Carp, Ralph W., to Bendix Corporation, The. Adaptive braking control system. 3,704,043, Cl. 303-21.0be.

Higgs, William York, to Star Lifeline Limited. Anchoring device for buoyant life saving equipment. 3,703,736, Cl. 9-9.000.

Hildreth, Clarence L., to Ethyl Corporation. Chloridizing alumina-containing ore. 3,704,113, Cl. 75-1.000.

Hill, Bryan H. Process for forming a p-n junction in a semiconductor material. 3,704,178, Cl. 148-1.500.

Hill, Warner M.: *See*—
Heck, Joseph G.; and Hill, Warner M., 3,704,204.

Hill, William H., to Peter, Strong & Company, Inc. Denture cleansers. 3,704,227, Cl. 252-95.000.

Hinderer, Rolf, to Hinderer, Rolf, GmbH. Trousers with adjustable waist. 3,703,729, Cl. 2-237.000.

Hinderer, Rolf, GmbH: *See*—
Hinderer, Rolf, 3,703,729.

Hodge, Edward B., to Commercial Solvents Corporation. Zearalenone reduction. 3,704,248, Cl. 260-343.20f.

Hoerbiger Ventilwerke Aktiengesellschaft: *See*—
Bauer, Friedrich; and Kohler, Robert, 3,703,912.

Hoffmann-La Roche Inc.: *See*—
Uskokovic, Milan Radoje, 3,704,324.

Hoganas AB: *See*—
Wastenson, Erik Goran; and Bockstiegel, Georg Heinrich Artur Gerhard, 3,704,115.

Hohmann, Walter: *See*—
Bien, Hans-Samuel; Hohmann, Walter; Vollmann, Heinrich; and Heinrich, Leister, 3,704,252.

Holdoway, Michael Joseph: *See*—
Hardy, Clarence James; and Holdoway, Michael Joseph, 3,704,147.

Holmes, David Alan, to Du Pont de Nemours, E. I., and Company. Concentration of polytetrafluoroethylene aqueous dispersion. 3,704,272, Cl. 260-29.60f.

Holovka, Charles, Jr.; Demchyshyn, Bohdan; and McHugh, John Francis, to International Business Machines Corporation. Apparatus and method for mounting cards on a web. 3,704,015, Cl. 270-52.000.

Holtschmidt, Hans: *See*—
Zecher, Wilfried; Kuhle, Engelbert; and Holtschmidt, Hans, 3,704,307.

Holznagel, Melvin A., to Cardiac Resuscitator Corporation. Cardiac resuscitator. 3,703,900, Cl. 128-419.00p.

Honeycutt, Don R., to Redman Industries, Inc., mesne. Hydraulic control system. 3,703,850, Cl. 91-446.000.

Honeywell Inc.: *See*—
Dougherty, William R., 3,703,829.

Hong, Sung Kul. Projection screen. 3,704,055, Cl. 350-128.000.

Honjo, Satoru; Watarai, Syu; and Ono, Hisatake, to Fuji Photo Film Co., Ltd. Electrophotographic process using toner of same refractive index as organic photoconductive layer. 3,704,119, Cl. 96-1.00r.

Hoover Company, The: *See*—
Knapp, Robert S., 3,703,777.

Horeschi, Giancarlo: *See*—
Barozzi, Gian Piero; and Horeschi, Giancarlo, 3,703,986.

Horii, Kazuo: *See*—
Ueoka, Hisayoshi; Horii, Kazuo; Umeya, Kazumasa; and Maruyama, Syunsuke, 3,704,266.

Horikiri, Toshihiko; and Tsuji, Ryuta, to Kabushikikaisha Tokyo Keiki (Tokyo-Keiki Co., Ltd.). Reducing valv. 3,703,911, Cl. 137-491.000.

Horikoshi, Akira: *See*—
Koda, Ken'Ichi; Kikuchi, Shoji; Wada, Tsuneo; Kuwabara, Yoshimi; Horikoshi, Akira; Tanimura, Kensaku; and Sugita, Sadao, 3,704,128.

Hottle, Dwight E. Segmented tire mold having hinged arcuate tread sectors. 3,704,082, Cl. 425-46.000.

Hou, Joseph P.; and Poole, John W., to American Home Products Corporation. 6-(1-Substituted aminocycloalkanecarboxamido)-penicillanic acid and salts. 3,704,290, Cl. 260-239.100.

Houseman, Paul S.: *See*—
Hickner, George B.; Howard, Donald W.; Houseman, Paul S.; and Carp, Ralph W., 3,704,043.

Howard, Donald W.: *See*—
Hickner, George B.; Howard, Donald W.; Houseman, Paul S.; and Carp, Ralph W., 3,704,043.

Howard, Lawrence K. Character generator. 3,704,343, Cl. 178-30.000.

Howard, Robert; Robinson, Prentice I.; and Menhennett, Herbert E., to Centronics Data Computer Corporation. High-speed printer. 3,703,949, Cl. 197-1.00r.

Howell, Wallace E.: *See*—
Eustis, William E. C.; and Howell, Wallace E., 3,703,991.

HSH, Inc.: *See*—
Feistel, Robert B., Jr., 3,703,776.

Hudecek, Carl J.: *See*—
Finn, John B.; and Hudecek, Carl J., 3,704,110.

Hughes, John Barry, to U.S. Philips Corporation. Associative storage element. 3,704,456, Cl. 340-173.0am.

Hughes, William L.; Allison, Hansel J.; and Ramakumar, Ramachandra G., to Oklahoma State University. High pressure storage vessel. 3,703,976, Cl. 220-3.000.

Huhn, Dieter Karl Wilhelm. Double acting rotary mechanical seal. 3,704,020, Cl. 277-62.000.

Humphreys, Wendell Lewis. Discharge electrode tensioning means. 3,703,799, Cl. 55-147.000.

Hunt, Larry R.: *See*—
Foster, John R.; and Hunt, Larry R., 3,703,741.

Hunter, William Allan, to Heatherwill Company. Method and apparatus for caing in molds radially displaced on rotating table. 3,703,921, Cl. 164-130.000.

Huntzinger, Gerald O., to General Motors Corporation. Bistable throttle control system. 3,704,382, Cl. 307-233.000.

Hurtsteel Products Ltd.: *See*—
Erb, Brian Richard, 3,703,909.

Hutchins, Samuel F. Apparatus for measuring and indicating the angular position of an antenna. 3,704,449, Cl. 340-198.000.

Hutchinson, William Y.; and Kushmuk, Walter P., to Continental Scale Corporation. Weighing scale with concealable dial. 3,703,935, Cl. 177-124.000.

Huthsing, Charles K., Jr.; deceased (Huthsing, N. Evelyn; executor). Pressure indicator. 3,703,879, Cl. 116-70.000.

Huthsing, N. Evelyn: *See*—
Huthsing, Charles K., Jr., 3,703,879.

Hydr-O-Matic Pump Company: *See*—
Conery, William J.; and Kaessen, Donald A., 3,704,078.

Hydro Tech Services, Inc.: *See*—
Arnold, James F., 3,704,033.

Hydro-Vel Services, Inc.: *See*—
Ice, Charleso., Jr., 3,703,905.

Hydrocarbon Research Inc.: *See*—
Alpert, Seymour B., 3,704,108.

I-T-E Imperial Corporation: *See*—
Kussy, Frank W.; and Heberlein, Gustave E., Jr., 3,704,435.
McConnell, Lorne D., 3,704,391.

Ice, Charleso., Jr., to Hydro-Vel Services, Inc. Heat exchanger cleaning system. 3,703,905, Cl. 134-144.000.

ICI America Inc.: *See*—
Shay, Barry Michael, 3,704,225.

Ideboen, John: *See*—
Zitzler, Earl W.; and Ideboen, John, 3,704,195.

Ifield, Richard Joseph; and Ifield, William Robert. Hydraulic actuator. 3,703,851, Cl. 92-33.000.

Ifield, William Robert: *See*—
Ifield, Richard Joseph; and Ifield, William Robert, 3,703,851.

Ikeda, Kazuhiko, to National Cash Register Company, The. Keyboard locking device. 3,703,987, Cl. 235-26.000.

Illinois Tool Works Inc.: *See*—
Hamman, Denver C., 3,703,747.

Immel, Richard H., to Sinclair-Koppers Company. Vacuum mold for making foamed polymeric articles. 3,704,081, Cl. 425-4.000.

Imperial Chemical Industries Limited: *See*—
Bowden, Roy Dennis, 3,704,238.

Imperial Tobacco Company (of Great Britain and Ireland) Limited, The: *See*—
Sargrove, John Adolph, 3,703,902.

Inacker, Edward C. Multiple compartment dispensing box. 3,703,955, Cl. 206-42.000.

Inagaki, Tatsumi: *See*—
Kodama, Yutaka; Takai, Akira; and Inagaki, Tatsumi, 3,704,335.

Inamorato, Jack Thomas, to Colgate-Palmolive Company. Ternary foam control composition and built anionic detergent composition containing same. 3,704,267, Cl. 252-524.000.

indsey, James M., to Sperry Sun Well Surveying Company. Gyro servo control system and structure. 3,704,406, Cl. 318-648.000.

Industrie-Werke Karlsruhe Aktiengesellschaft: *See*—
Madlener, Paul; and Pecksen, Otto, 3,703,867.

Information Transfer Corporation: *See*—
Sims, John C., Jr.; and Brace, Lloyd D., Jr., 3,704,337.

Ingram, Brian; Harries, David A.; and Phoenix, Lancelot, to Girling Limited. Actuator assemblies for hydraulic braking systems. 3,704,044, Cl. 303-21.00f.

Inland Steel Company: *See*—
Heitmann, William E.; and Garofalo, Frank, 3,704,180.

Inoue, Kiyoshi; Ishikawa, Tetsuo; and Okada, Shingo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Automatic packing and wrapping apparatus. 3,703,796, Cl. 53-180.000.

Integrated Development and Manufacturing Co.: *See*—
Davis, Noel, 3,703,814.

Internal Pipeline Services, Inc.: *See*—
Landrum, Ira T., 3,703,947.

International Business Machines Corporation: *See*—
Beausoleil, William F.; Brown, David T.; and Clark, William A., 3,704,452.
Blackwell, Wayne Waldo; Earle, John Goodell, O'Connell, John Joseph; Pierce, Edwin Bruce; and Shabe, John Edward, 3,704,453.
Cuomo, Jerome J.; Mayadas, Ashok F.; and Rosenberg, Robert, 3,704,166.
Elliott, Brian J.; and Staples, John L., 3,704,416.
Holovka, Charles, Jr.; Demchyshyn, Bohdan; and McHugh, John Francis, 3,704,015.
Phillips, Sidney L., 3,704,211.
Salmassy, Oscar E.; and Sullivan, Robert E., 3,704,363.
Shafer, Merrill W., 3,704,278.
Simone, Roy R. De; and Linton, Richard H., 3,704,384.

International Computer Products, Inc.: *See*—
Miller, Robert N., 3,704,401.

Internationil Business Machines Corporation: *See*—
Steger, Donald J., 3,703,853.

Inventors & Investors, Inc.: *See*—
Lehovec, Kurt; and Seeley, William G., 3,704,376.

Inventors and Investors, Inc.: *See*—
Lehovec, Kurt, 3,704,377.

Ireland, Robert G.; Mas, Fred L.; and Teeguarden, Ross W., to Stewart-Warner Corporation. Heat exchanger core. 3,703,925, Cl. 165-151.000.

Irwin, Charles B., Jr. Means for attaching goggles to helmets. 3,703,750, Cl. 24-265.00r.

Ishikawa, Tetsuo: *See*—
Inoue, Kiyoshi; Ishikawa, Tetsuo; and Okada, Shingo, 3,703,796.

Ismail, Roshdy, to Dynamit Nobel Aktiengesellschaft. Production of halogen-containing polyaryl ester. 3,704,279, Cl. 260-61.000.

Itoh, Akira. Cord hangers for hoist. 3,704,350, Cl. 191-12.00r.

Ivanchenko, Viktor Vasilievich: *See—*

Bodunov, Igor Vasilievich; Modestov, Boris Sergeevich; and Ivanchenko, Viktor Vasilievich, 3,704,076.

Iversen, Kristian, to Danfoss A/S. Regulating means. 3,704,404, Cl. 318-290.000.

Jackson, George E., to Union Carbide Corporation. Foundation garment and method of making same. 3,703,820, Cl. 66-177.000.

James, Darrell R.: *See—*

Olevitch, Albert; and James, Darrell R., 3,703,813.

Jamieson, Ian K. Portable device for testing electrical appliances. 3,704,411, Cl. 324-53.000.

Jamison, Saunders Eliot: *See—*

Soehngen, John William; Wagner, William Sherwood; Jamison, Saunders Eliot; and Canfield, Dale Kelley, 3,704,192.

Janes, Jerry M.: *See—*

Valdo, Alex R.; and Janes, Jerry M., 3,704,193.

Jankowiak, Erwin M.: *See—*

Kott, Alan C.; Jankowiak, Erwin M.; and Lane, George A., 3,704,187.

Japan Chemurgy Co., Ltd.: *See—*

Hara, Kazuo; Samoto, Mistunobu; Sawai, Masanobu; and Nakamura, Shiro, 3,704,168.

Jeskey, Gerald Vernon: *See—*

Whisler, Howard E.; Shah, Bhupendra Umedchand; Jeskey, Gerald Vernon; and Bloom, Ray Albert, 3,703,924.

Jewell, George S.: *See—*

Parker, Robert E.; Lodge, Malcolm A.; and Jewell, George S., 3,704,372.

Johann Borgers KG, Firma: *See—*

Schulte, Alfons, 3,703,752.

Johansson, Bengt; and Nilsson, Erland, to Allmanna Svenska Elektriska Aktiebolaget. Spark gap for surge diverters. 3,704,388, Cl. 315-36.000.

Johansson, Karl Bertil Sune: *See—*

Sundsten, Owe Wilhelm; and Johansson, Karl Bertil Sune, 3,703,916.

Johnson, Lennart B., to Teradyne, Inc. Receptacle for printed circuit structures with bus bar mounting means. 3,704,394, Cl. 317-101.0dh.

Johnson, Perry T.: *See—*

Cerveny, Daniel H.; Johnson, Perry T.; and Gaston, Donald H., 3,704,025.

Johnson, Philip M.; Dudevoir, Wilfried G.; and Northrup, Richard M., wSanders Associates, Inc. Direction determining system. 3,704,070, Cl. 356-152.000.

Johnson, Robert Norman, to Union Carbide Corporation. High temperature reduced catalyst and process. 3,704,287, Cl. 260-94.9da.

Joly, Jean: *See—*

Blanc, Charles; and Joly, Jean, 3,703,754.

Jones, John M., Jr. Apparatus for processing shrimp and related shellfish. 3,703,746, Cl. 17-71.000.

Jones, Joseph Kennedy; and Smith, Milton Louis, to Cotton, Incorporated. Seed cotton stacking apparatus. 3,703,966, Cl. 214-9.000.

Joosten, Wesley L.: *See—*

Bullard, Edwin R., Jr.; and Joosten, Wesley L., 3,703,828.

Judd, Claude I.: *See—*

Skorcz, Joseph A.; Suh, John T.; and Judd, Claude I., 3,704,299.

Junak, Edward M.: *See—*

Schweitzer, John C.; and Junak, Edward M., 3,704,385.

Kabushiki Kaisha Ricoh: *See—*

Yamaguchi, Nario; Shimizu, Sakae; and Tubuko, Kazuo, 3,704,122.

Kabushiki Kaisha Suwa Seikasha: *See—*

Tsuruishi, Yuki, 3,703,838.

Kabushikikaisha Tokyo Keiki (Tokyo-Keiki Co., Ltd.): *See—*

Horikiri, Toshihiko; and Tsuji, Ryuta, 3,703,911.

Kadron, Stanley F.; Eisenhauer, Gary L.; Pryor, David J.; and Chacon, Raul J., to Bendix Corporation, The. ADF with remote digital tuning. 3,704,423, Cl. 325-458.000.

Kaessen, Donald A.: *See—*

Conery, William J.; and Kaessen, Donald A., 3,704,078.

Kaieda, Nobuo: *See—*

Yamanaka, Takashi; Miyauchi, Rinichi; Fujita, Hisaya; and Kaieda, Nobuo, 3,704,415.

Kakehashi, Toshiro: *See—*

Hanaoka, Takemi; Kakehashi, Toshiro; Toyomasu, Ryota; and Yata, Tomio, 3,704,316.

Kalbskopf, Karl-Heinz, to FMC Corporation. Turboventilator for the input of oxygen into liquids. 3,704,009, Cl. 261-91.000.

Kalish, Arthur. Self-adjusting sewing machine gage. 3,703,873, Cl. 112-153.000.

Kalium Chemicals Limited: *See—*

Kelly, Clifford J., 3,704,101.

Kalkhof, Gustav: *See—*

Pfeuffer, Alfred; Kalkhof, Gustav; and Weber, Helmut, 3,704,012.

Kallianos, Andrew G.: *See—*

Norman, Vello; Williams, Thomas B.; Kallianos, Andrew G.; and Mold, James D., 3,703,901.

Kaltenbronn, James S.; and Short, Franklin W. 4-and 5-aryl-1-naphthaleneethanol compounds. 3,704,328, Cl. 260-618.00f.

Kaneko, Masanao: *See—*

Kishida, Yukichi; Soma, Nobuo; Nakazawa, Junichi; Sato, Yoshio; Matsuda, Hidebumi; Terada, Atsusuke; Watanabe, Taiichiro; Sugimura, Yukio; Miyamura, Toshihide; Kaneko, Masanao; and Watatani, Mitsuo, 3,704,294.

Kanter, Jerome J., to Crane Co. Process for enameling ferrous articles. 3,704,153, Cl. 117-23.000.

Karll, Robert E.: *See—*

Piasek, Edmund J.; and Karll, Robert E., 3,704,308.

Karlson, Eskil L.: *See—*

Verses, Christ J.; and Karlson, Eskil L., 3,704,096.

Karstensen, Karl W.; and Kizer, Richard W., to Caterpillar Tractor Co. Combined turbine nozzle and bearing frame. 3,704,075, Cl. 415-68.000.

Kato, Masaaki; and Sato, Shigeta, to Asahi Kasei Kogyo Kabushiki Kaisha. Electrodialysis method using ion exchange membranes. 3,704,218, Cl. 204-180.00p.

Kato, Tetsuya: *See—*

Yamashita, Takashi; Chida, Yugo; Ninagawa, Sadayoshi; and Kato, Tetsuya, 3,704,317.

Katsuragi, Mamoru, to Minolta Camera Kabushiki Kaisha. Daylight film developing tank. 3,703,859, Cl. 95-90.500.

Kauf, Walter. Wire stripper. 3,703,840, Cl. 81-9.50r.

Kaufman, Jack W. Implements (III). 3,704,072, Cl. 401-291.000.

Kaufman, Theodore Phillip, to Control Technology, Inc. Ambient light variation detector. 3,704,374, Cl. 250-206.000.

Kaufmann, Otto: *See—*

Bayew, Dimiter; Daeuble, Manfred; Kaufmann, Otto; Ludsteck, Dieter; Pfitzner, Helmut; and Witsch, Heinz-Guenter, 3,704,086.

Kaule, Gustav: *See—*

Lepold, Manfred F.; Heinze, Gerhard; Kaule, Gustav; and Podschus, Ernst, 3,703,797.

Kawaguchi, Hideo: *See—*

Yamamoto, Nobuo; and Kawaguchi, Hideo, 3,704,167.

Kawasaki Steel Corporation: *See—*

Saito, Tatsuo; Akahide, Kozo; and Ukebe, Teruo, 3,704,358.

Keene, Robert F. Quick adjusting C-clamp. 3,704,014, Cl. 269-249.000.

Kehr, Clifton Leroy: *See—*

Ketley, Arthur Donald; Kehr, Clifton Leroy; and Touchette, Jennie Lee, 3,704,125.

Kelly, Clifford J., to Kalium Chemicals Limited. Method for operating multiple effect evaporator. 3,704,101, Cl. 23-296.000.

Kelly Systems, Inc.: *See—*

Kelly, William F., 3,703,748.

Kelly, William F., to Kelly Systems, Inc. Anchor frr post-tensioning prestressed concrete. 3,703,748, Cl. 24-126.000.

Kelsey-Hayes Company: *See—*

Hendrickson, Paul G., 3,703,944.

Kempa, Joseph E.: *See—*

Sullivan, Paul G.; MacLeod, Kenneth H.; and Kempa, Joseph E., 3,703,995.

Kendall Company, The: *See—*

Mack, Robert J.; and Fischer, John L., 3,703,897.

Kenics Corporation: *See—*

Grout, Kenneth M.; and Devellian, Richard D., 3,704,006.

Kennedy, Kenneth F. Marine sewage collection and discharge systems. 3,703,960, Cl. 210-121.000.

Ketley, Arthur Donald; Kehr, Clifton Leroy; and Touchette, Jennie Lee, to Grace, W. R., & Co. Color process. 3,704,125, Cl. 96-14.000.

Kikuchi, Shoji: *See—*

Koda, Ken'Ichi; Kikuchi, Shoji; Wada, Tsuneo; Kuwabara, Yoshimi; Horikoshi, Akira; Tanimura, Kensaku; and Sugita, Sadao, 3,704,128.

Kilian, Louis: *See—*

Pillot, Maurice; and Kilian, Louis, 3,703,847.

Kilshaw, John A.: *See—*

Osborne, Denis A. N.; Haines, Robert C.; and Kilshaw, John A., 3,703,824.

Kim, Havertown Dong H.: *See—*

Santilli, Arthur A.; and Kim, Havertown Dong H., 3,704,242.

Kindy, Ronald J.: *See—*

Miller, Earl D., Jr.; and Kindy, Ronald J., 3,704,405.

King, George. Explosive charge device and assembly. 3,703,780, Cl. 42-1.00r.

King, Gordon E.: *See—*

Galloway, Dwight V.; King, Gordon E.; Asbelle, Charles C.; and Arrigo, Michael F., 3,703,894.

King, Josef: *See—*

Ganter, Wolfgang; Otto, Heinz; and King, Josef, 3,703,805.

Kinstley, Warren O.; and Sivertsen, David R., to Texas Instruments, Incorporated. Method of depositing a metal oxide film by electron bombardment. 3,704,216, Cl. 204-164.000.

Kiser, Warren C., to Shovel Supply Co., Inc. Control apparatus. 3,703,836, Cl. 74-471.00r.

Kishida, Yukichi; Soma, Nobuo; Nakazawa, Junichi; Sato, Yoshio; Matsuda, Hidebumi; Terada, Atsusuke; Watanabe, Taiichiro; Sugimura, Yukio; Miyamura, Toshihide; Kaneko, Masanao; and Watatani, Mitsuo; deceased (by Watatani, Takako; heiress), to Sankyo Compan Limited. Process for preparing 6-aminopenicillanic acid compounds. 3,704,294, Cl. 260-239.100.

Kishimoto, Shoji: *See—*

Noguchi, Shunsaku; and Kishimoto, Shoji, 3,704,241.

Kitch, Paul E., to Scott Paper Company. Film processing apparatus. 3,704,069, Cl. 355-110.000.

Kizer, Richard W.: *See—*

Karstensen, Karl W.; and Kizer, Richard W., 3,704,075.

Klingaman, Dean C.: *See—*

Page, Russell D.; Klingaman, Dean C.; and Scholl, Rolland D., 3,703,931.

Kluge, Johannes: *See—*

Lichtenvort, Uwe; Kluge, Johannes; and Schleyer, Meinolf, 3,704,355.

Kmet, Thomas J.; and Loboda, Jon A., to Richardson Company, The. Polyoxyalkylene bis-thiourea extreme pressure agents and methods of use. 3,704,321, Cl. 260-552.00r.

Knapp, Heinrich: *See—*

Eckert, Konrad; and Knapp, Heinrich, 3,703,888.

Knapp, Robert S., to Hoover Company, The. Steam-dry iron. 3,703,777, Cl. 38-77.830.

Knitting Specialty Machinery Corporation, mesne: *See—*

Haft, Peter, 3,703,882.

Kobayashi, Keisuke: *See—*

Maeda, Hisao; and Kobayashi, Keisuke, 3,704,457.

Koda, Ken'Ichi; Kikuchi, Shoji; Wada, Tsuneo; Kuwabara, Yoshimi; Horikoshi, Akira; Tanimura, Kensaku; and Sugita, Sadao, to Konishiroku Photo Industry Co., Ltd. N-Ylide compounds as antistatic agents in photography. 3,704,128, Cl. 96-50.000.

Kodama, Yutaka; Takai, Akira; and Inagaki, Tatsumi, to Toyama Chemical Co., Ltd. Method for promoting the growth of livestock. 3,704,335, Cl. 424-249.000.

Koens, Gilliaan Peter: *See—*

Slack, Vaughn H.; and Koens, Gilliaan Peter, 3,703,861.

Kohashi, Tadao: *See—*

Nakamura, Shigeaki; Nakamura, Tadao; and Kohashi, Tadao, 3,704,265.

Kohda, Akihide; Kohno, Shigeharu; Takahashi, Tohru; and Sugimoto, Hachiro, to Eisai Co., Ltd. N-Lower alkyl-substituted n'-[β-(2',5'-dephenylpyrrolyl-1')] ethylhomopiperazines. 3,704,244, Cl. 260-326.900.

Kohler, Heinz-Werner, to Mobus, Karl, KG Zeichnungs-Ordner. Cabinet for the hanging storage of drawings, plans or the like. 3,704,051, Cl. 312-184.000.

Kohler, Robert: *See—*

Bauer, Friedrich; and Kohler, Robert, 3,703,912.

Kohlhaupt, Reinhold: *See—*

Fischer, Adolf; Becke, Friedrich; and Kohlhaupt, Reinhold, 3,704,310.

Kohno, Shigeharu: *See—*

Kohda, Akihide; Kohno, Shigeharu; Takahashi, Tohru; and Sugimoto, Hachiro, 3,704,244.

Kohtani, Yutaka: *See—*

Goshima, Takeshi; and Kohtani, Yutaka, 3,704,349.

Goshima, Takeshi; and Kohtani, Yutaka, 3,704,400.

Kolbeck, Winfried: *See—*

Stark, Adolf F.; Kolbeck, Winfried; and Bayerlein, Friedrich J., 3,704,318.

Kolby, Mark J.; and Goldbach, Henry T., to Bio-Medical Sciences, Inc. Quality control system. 3,704,362, Cl. 235-151.130.

Komor, Joseph A., to GAF Corporation. Surfactant for electrolyte-containing processing solutions. 3,704,262, Cl. 252-353.000.

Koncos, Robert: *See—*

Vrbaski, Theodor; Vitchus, Bernard C.; and Koncos, Robert, 3,704,251.

Kondur, Nicholas, Jr.: *See—*

Mack, Ronald H.; Wilczewski, Robert H.; and Kondur, Nicholas, Jr., 3,703,948.

Konishi, Mikio, to New Lite Industry Company Limited. Plastic hinge. 3,703,742, Cl. 16-128.000.

Konishiroku Photo Industry Co., Ltd.: *See—*

Koda, Ken'Ichi; Kikuchi, Shoji; Wada, Tsuneo; Kuwabara, Yoshimi; Horikoshi, Akira; Tanimura, Kensaku; and Sugita, Sadao, 3,704,128.

Korb, Lawrence J.; and Soja, Joseph. Outdoor lighted artificial Christmas tree. 3,704,366, Cl. 240-10.00t.

Korb, Lawrence J. Lighted Christmas star display. 3,704,367, Cl. 240-10.00s.

Kosche, Horst. Method of multiple transfer of latent electrostatic images. 3,704,120, Cl. 96-1.00r.

Koshar, Robert J., to Minnesota Mining and Manufacturing Company. Functional bis (perfluoroalkylsulfonyl) alkyl compounds. 3,704,311, Cl. 260-486.00h.

Kotheimer, William C.: *See—*

Chen, Muchuan M.; and Kotheimer, William C., 3,704,392.

Kott, Alan C.; Jankowiak, Erwin M.; and Lane, George A., to Dow Chemical Company, The. Pyrotechnic disseminating composition. 3,704,187, Cl. 149-60.000.

Kracauer, Paul. Popcorn product. 3,704,133, Cl. 99-83.000.

Kraft, Lewis E. Machine tool spindle and drive. 3,703,846, Cl. 90-11.000.

Kraft, Michael J.: *See—*

Swanson, Kenneth W.; Rolland, William C.; and Kraft, Michael J., 3,703,957.

Swanson, Kenneth W.; Rolland, William C.; and Kraft, Michael J., 3,703,958.

Krapcho, John, to Squibb, E. R., & Sons, Inc. Indane derivatives. 3,704,323, Cl. 260-576.000.

Krimmel, Carl Peter, to Searle, G. D., & Co. Adamantane-1,3-dicarboxylic acid esters. 3,704,306, Cl. 260-268.0pa.

Kroeger, Paul T. Paint can agitator and pouring top. 3,704,007, Cl. 259-122.000.

Krohn, Richard H.: *See—*

Rose, Edward A.; Krohn, Richard H.; and Slater, Donald E., 3,704,461.

Kuehl, Donald K.; Blackman, Arthur W.; and Glassman, Irvin, to United Aircraft Corporation. Isopycnic slurry formulations. 3,704,184, Cl. 149-1.000.

Kuhle, Engelbert: *See—*

Zecher, Wilfried; Kuhle, Engelbert; and Holtschmidt, Hans, 3,704,307.

Kuhn, Kenneth G.; and Chamberlain, Neal C., to FMC Corporation. Self metering feeder conveyor. 3,703,952, Cl. 198-102.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*

Inoue, Kiyoshi; Ishikawa, Tetsuo; and Okada, Shingo, 3,703,796.

Kurtz, Abraham J.: *See—*

Smith, Avery B.; Hennig, Ralph R.; Kurtz, Abraham J.; and Pantchenko, Gregory, 3,704,098.

Kusel, Edward J., to Questor Corporation. Tubular spindle having deformable flattened ends. 3,704,005, Cl. 256-22.000.

Kushmuk, Walter P.: *See—*

Hutchinson, William Y.; and Kushmuk, Walter P., 3,703,935.

Kusovsky, Boris Isaakovich; Pavlov, Nikolai Ivanovich; Matiichenko, Anatoly Petrovich; Zakharov, Sergei Alexandrovich; and Birjukov, Dmitry Anatolievich, to Ryazansky Filial Spetsialnogo Konstruktorskogo Bjuro Ann. Device for automatic control of the proces of crude petroleum desalting and dehydration in electric dehydrators. 3,704,222, Cl. 204-306.000.

Kussy, Frank W.; and Heberlein, Gustave E., Jr., to I-T-E Imperial Corporation. Tripping system for circuit breaker. 3,704,435, Cl. 335-255.000.

Kusters, Eduard, Maschinenfrik: *See—*

Appenzeller, Valentin, 3,703,862.

Kuwabara, Yoshimi: *See—*

Koda, Ken'Ichi; Kikuchi, Shoji; Wada, Tsuneo; Kuwabara, Yoshimi; Horikoshi, Akira; Tanimura, Kensaku; and Sugita, Sadao, 3,704,128.

La Canfora, Peter S., to Gyrex Corporation, mesne. Apparatus for preparing master reticles. 3,703,858, Cl. 95-12.000.

La Via, Anthony Laurence; O'Laughlin, Richard Lawrence; and Walton, Richard Wiegmann, to Squibb, E. R., & Sons, Inc. Low-calorie sweetening composition and method of producing the same 3,704,138, Cl. 99-141.00a.

Lackey, Marion D.: *See—*

Davis, Leo W.; Lackey, Marion D.; Ross, John Reuben; and Trenary, Bryant, 3,704,040.

Lagofun, Guy Jean Theodore, to Etat Francais represents par le Ministre charge de la Defense Nationale Delegation Ministerielle pour l' Armement. Arc igniter circuit closing device and methods of operation thereof. 3,704,354, Cl. 200-144.00r.

Laing, Nikolaus. Storage panels, particularly for heated floors. 3,704,359, Cl. 219-213.000.

Land, Edwin H.; Bloom, Stanley M.; and Farney, Leonard C., to Polaroid Corporation. Silver image stabilization with noble metal compounds. 3,704,126, Cl. 96-29.00r.

Landi, Henry Patrick, to American Cyanamid Company. Catalytic membrane air electrodes for fuel cell and fuel cells containing same. 3,704,171, Cl. 136-86.00a.

Landis, Donald E.; Sidhu, Mohanjit S.; and Cone, Richard E., to National Cash Register Company, The. Rotary drum coin stacking and dispensing device. 3,703,903, Cl. 133-1.000.

Landrum, Ira T., to Internal Pipeline Services, Inc. Internal pipeline coating apparatus. 3,703,947, Cl. 188-290.000.

Landwier, William G., to Maytag Company, The. Dishwasher condenser system. 3,704,170, Cl. 134-25.00a.

Lane, George A.: *See—*

Kott, Alan C.; Jankowiak, Erwin M.; and Lane, George A., 3,704,187.

Lanham, Richard R. Digital read out indicator for vehicles. 3,704,445, Cl. 340-62.000.

Lannert, Kent P., to Monsanto Company. Detergent formulations. 3,704,320, Cl. 252-546.000.

Laudadio, Sanfrancisco Cayetano Roque. Suspension system for motor vehicles. 3,704,027, Cl. 280-87.00b.

Lavarda, John. Preparation of ricotta cheese curd. 3,704,136, Cl. 99-116.000.

Laverty, Richard C., to MSL Industries, Inc. Fastener with improved thread construction. 3,703,843, Cl. 85-46.000.

Leeds & Northrup Company: *See—*

Cohn, Nathan, 3,704,380.

Lehovec, Kurt; and Seeley, William G., to Inventors & Investors, Inc. Photo-electric junction field-effect sensors. 3,704,376, Cl. 250-211.00j.

Lehovec, Kurt, to Inventors and Investors, Inc. Laser comprising Fresnel optics. 3,704,377, Cl. 331-94.50d.

Leiser, Florence E. Portable urinal. 3,703,731, Cl. 4-110.000.

Leitgeb, Wilhelm, to Siemens Aktiengesellschaft. Speed controlled synchronous inverter motor. 3,704,402, Cl. 318-166.000.

Lemgo-Lippe, Kurt Hesse, to Staff & Schwarz G.m.b.H. Current distributor rail. 3,704,437, Cl. 339-21.00r.

Lemieux, Thomas H., to United States of America, Navy. Flexible hose wire payout system. 3,703,874, Cl. 114-21.00r.

Lepold, Manfred F.; Heinze, Gerhard; Kaule, Gustav; and Podschus, Ernst, to Bayer Aktiengesellschaft. Adsorption process for the complete and nondissipative separation of a gas mixture into adsorbable and non-adsorbable, in particular radioactive component. 3,703,797, Cl. 55-62.000.

- Leugering, Hans-Joachim: *See—*
  - Burg, Karlheinz; Wolters, Ernst; Cherdron, Harald; and Leugering, Hans-Joachim, 3,704,275.
- Lever Brothers Company: *See—*
  - Aneja, Rajindra, 3,704,254.
- Levolor Lorentren, Inc.: *See—*
  - Debs, Victor, 3,703,920.
- Lewis, Frederick M.: *See—*
  - Berger, Abe; and Lewis, Frederick M., 3,704,261.
- Libbey-Owens-Ford Company: *See—*
  - Wampler, David M., 3,703,880.
- Lichtenvort, Uwe; Kluge, Johannes; and Schleyer, Meinolf, to Demag AG. Hanging type switch construction. 3,704,355, Cl. 200-157.000.
- Liggett & Myers Incorporated: *See—*
  - Norman, Vello; Williams, Thomas B.; Kallianos, Andrew G.; and Mold, James D., 3,703,901.
- Limbough, Pol Jean, to U.S. Philips Corporation, mesne. Method of manufacturing miniaturized electric circuits. 3,704,163, Cl. 117-212.000.
- Lind, Willard M., to FMC Corporation. Method of aligning forms. 3,703,762, Cl. 29-464.000.
- Lindsey, James M.; and Stell, Thomas W., to Sperry-Sun Well Surveying Company. Rotor tilt. 3,703,832, Cl. 74-5.450.
- Lindsey, James M., to Sperry Sun Well Surveying Company. Gyro servo control system and structure. 3,704,407, Cl. 318-648.000.
- Lindstrom, Olle B. Pyrolysis of hydrocarbons. 3,704,332, Cl. 260-679.00r.
- Linn, Wallace L.; and Voland, Elmo W., to Mallory, P. R., & Co., Inc. Timer with sandwiched internal escapement mechanism disposed between two programming means. 3,704,351, Cl. 200-38.00r.
- Linnenbecker, Udo: *See—*
  - Renner, Eskhard; and Linnenbecker, Udo, 3,703,849.
- Linton, Richard H.: *See—*
  - Simone, Roy R. De; and Linton, Richard H., 3,704,384.
- Lipscomb, Walter P.: *See—*
  - Buresh, Francis M.; Nisenson, Stanley M.; Lipscomb, Walter P.; and Saich, Anthony M., 3,704,191.
- Little, Arthur D., Inc.: *See—*
  - Haggerty, John S.; and Wenckus, Joseph F., 3,704,093.
- Loboda, Jon A.: *See—*
  - Kmet, Thomas J.; and Loboda, Jon A., 3,704,321.
- Lockwood, Don L.: *See—*
  - Hand, John W.; Lockwood, Don L.; and Harris, Robert K., 3,704,011.
- Loctite Corporation: *See—*
  - Gorman, Jeremy W., 3,704,264.
- Lodge, Malcolm A.: *See—*
  - Parker, Robert E.; Lodge, Malcolm A.; and Jewell, George S., 3,704,372.
- Lofftus, Leroy A.: *See—*
  - Forys, Edward Louis; Lofftus, Leroy A.; Malueg, Richard Milton; and Montalbano, Albert F., 3,703,999.
- Lofstrand, Wilton S.; and Montgomery, John G., said Lofstrand assor. to FMC Corporation. Automatic sprinkling system. 3,703,930, Cl. 169-2.00r.
- Longensiepen, Max, Kom, Ges.: *See—*
  - Mattes, Heinz Otto; and Flesch, Friedrich, 3,703,790.
- Loricchio, Domingos, to Carborundum Company, The. Exothermic compositions. 3,704,230, Cl. 252-182.000.
- Loveland, Malcolm W.; and Singleton, Robert J., to Atlas Pacific Engineering Company. Apparatus for feeding conveyor from bulk supply. 3,704,041, Cl. 302-14.000.
- Lucas, Joseph, (Industries) Limited: *See—*
  - Coffin, George, 3,704,418.
- Ludsteck, Dieter: *See—*
  - Bayew, Dimiter; Daeuble, Manfred; Kaufmann, Otto; Ludsteck, Dieter; Pfitzner, Helmut; and Witsch, Heinz-Guenter, 3,704,086.
- Luerken, Joseph: *See—*
  - Ty, Henry; and Luerken, Joseph, 3,704,179.
- Lundstrom, John W., to Moisture Register Company. Scanning impedance measuring system employing a spiral sensing element. 3,704,412, Cl. 324-61.00r.
- Mac Carr, Lottie. Elevated and confined floor area apparatus for the care of invalids and small children. 3,703,734, Cl. 5-99.00r.
- MacDonald, John L., to Cincinnati Incorporated. Safety device for machines. 3,704,396, Cl. 317-124.000.
- MacDuff, Richard, to Hercules Incorporated. Trimming flash with ultrasonic tool. 3,704,188, Cl. 156-73.000.
- Mack, Robert J.; and Fischer, John L., to Kendall Company, The. Hydrophobic non-adherent wound dressing. 3,703,897, Cl. 128-156.000.
- Mack, Ronald H.; Wilczewski, Robert H.; and Kondur, Nicholas, Jr., to Burroughs Corporation. Reciprocally engageable clutch mechanism. 3,703,948, Cl. 192-33.00r.
- MacKinney, John J., to Budd Company, The. Electroforming jointless metal belt. 3,704,175, Cl. 204-9.000.
- MacKinnon, Alan G., to Brode, W. M., Company, The. Highway slotting device. 3,703,857, Cl. 94-45.00r.
- MacLeod, Kenneth H.: *See—*
  - Sullivan, Paul G.; MacLeod, Kenneth H.; and Kempa, Joseph E., 3,703,995.
- Maddalena, Edward J.: *See—*
  - Maddalena, Richard E.; and Maddalena, Edward J., 3,703,884.
- Maddalena, Richard E.; and Maddalena, Edward J. Automated dairy barn milk stall. 3,703,884, Cl. 119-27.000.
- Mader, Rudolf Mayer; and Schwinum, Ernst, to Bayer Aktiengesellschaft. Process for the production of sulphur-modified polychloroprenes with improved storage life. 3,704,283, Cl. 260-79.000.
- Madlener, Paul; and Pecksen, Otto, to Industrie-Werke Karlsruhe Aktiengesellschaft. Mine detonator with electric ignition. 3,703,867, Cl. 102-70.20r.
- Madrid, Robert W.: *See—*
  - Wysocki, Joseph J.; Adams, James E.; and Madrid, Robert W., 3,704,056.
- Maeda, Hisaaki: *See—*
  - Maeda, Hisao; and Kobayashi, Keisuke, 3,704,457.
- Maeda, Hisao; deceased (Maeda, Hisaaki; heir); and Kobayashi, Keisuke, to Toko Kabushiki Kaisha. Driving technique for thin film memory elements. 3,704,457, Cl. 340-174.0pw.
- Maeda, Shigeyoshi: *See—*
  - Nishihara, Toshiro; Asano, Hidejiro; Maeda, Shigeyoshi; and Oyagi, Yashichi, 3,704,181.
- Maehr, Richard J.: *See—*
  - O'Connor, Charles A.; and Maehr, Richard J., 3,703,835.
- Maeno, Shizuo: *See—*
  - Umio, Suminori; Ueda, Ikuo; Sato, Yoshinari; and Maeno, Shizuo, 3,704,245.
- Maeshiba, Sozaburo. Direct-reading gasoline meter with bob and float control of measuring tape. 3,703,830, Cl. 73-321.000.
- Magerlein, Barney J., to Upjohn Company, The. Intermediates for making lincomycins and process for preparing the same. 3,704,289, Cl. 260-210.00r.
- Magnacheck Corporation: *See—*
  - Bradford, John Ramsey, 3,703,864.
- Magne, Frank C.: *See—*
  - Mod, Robert R.; Magne, Frank C.; and Skau, Evald L., 3,704,257.
- Makino, Katsuo; Yamada, Yoshihiko; and Onozaki, Jun, to Fuji Photo Film Co., Ltd. Electrophotographic reproduction process using a dual layered photoreceptor. 3,704,121, Cl. 96-1.000.
- Makino, Katsuo; and Sawato, Iwao, to Fuji Photo Film Co., Ltd. Dye sensitized photoconductive material. 3,704,123, Cl. 96-1.600.
- Malesci S.A.S. Istituto Farmacobiologico: *See—*
  - Giannini, Mario, 3,704,322.
- Mallory, P. R., & Co., Inc.: *See—*
  - Griffiths, Leonard B.; and Shen, Yuan-Shou, 3,704,182.
  - Linn, Wallace L.; and Voland, Elmo W., 3,704,351.
- Malueg, Richard Milton: *See—*
  - Forys, Edward Louis; Lofftus, Leroy A.; Malueg, Richard Milton; and Montalbano, Albert F., 3,703,999.
- Mankofsky, Ben: *See—*
  - Mann, Sam; and Mankofsky, Ben, 3,703,740.
- Mann, Sam; and Mankofsky, Ben, said Mann assor. to said Mankofsky, Ben. Drapery carrier device. 3,703,740, Cl. 16-87.200.
- Manuel, James C.: *See—*
  - Hale, Douglas; Manuel, James C.; and Beck, Nicholas R., 3,704,135.
- Marathon Oil Company: *See—*
  - Gotshall, William W., 3,704,276.
- Marini, Lorenzo: *See—*
  - Buchanan, Wilbert Bernard; and Haws, Leon, 3,704,458.
- Marshall, Harry L.: *See—*
  - Frey, James O.; Marshall, Harry L.; and Minnier, Henry B., 3,704,232.
- Martin, Hans. Brake mechanism attached to a ski. 3,704,024, Cl. 280-11.13b.
- Maruyama, Syunsuke: *See—*
  - Ueoka, Hisayoshi; Horii, Kazuo; Umeya, Kazumasa; and Maruyama, Syunsuke, 3,704,266.
- Mas, Fred L.: *See—*
  - Ireland, Robert G.; Mas, Fred L.; and Teeguarden, Ross W., 3,703,925.
- Masak, Raymond J.; and Baurle, Herbert F., to Hazeltine Corporation. Angular position determining system compensated for doppler. 3,704,465, Cl. 343-102.000.
- Masseran, Jean, to Micro-Mega. Dental instrument for root canal work. 3,703,767, Cl. 32-40.000.
- Mastic Corporation: *See—*
  - Mattes, Lee H., 3,703,795.
- Materials and Methods Limited: *See—*
  - Dunks, Clifford M.; and McCaulay, James L., 3,703,922.
- Matiichenko, Anatoly Petrovich: *See—*
  - Kusovsky, Boris Isaakovich; Pavlov, Nikolai Ivanovich; Matiichenko, Anatoly Petrovich; Zakharov, Sergei Alexandrovich; and Birjukov, Dmitry Anatolievich, 3,704,222.
- Matsuda, Hidebumi: *See—*
  - Kishida, Yukichi; Soma, Nobuo; Nakazawa, Junichi; Sato, Yoshio; Matsuda, Hidebumi; Terada, Atsusuke; Watanabe, Taiichiro; Sugimura, Yukio; Miyamura, Toshihide; Kaneko, Masanao; and Watatani, Mitsuo, 3,704,294.
- Matsumoto, Nobuo: *See—*
  - Eguchi, Fusatoshi; Okamoto, Sohei; Yamaha, Mashio; Matsumoto, Nobuo; and Yokoyama, Minoru, 3,703,963.
- Matsushita Electric Industrial Co., Ltd.: *See—*
  - Nakae, Nohuhiro; and Nakamura, Toru, 3,704,050.
- Matsushita Electric Industrial Company, Limited: *See—*
  - Nakamura, Shigeaki; Nakamura, Tadao; and Kohashi, Tadao, 3,704,265.

- Mattes, Heinz Otto; and Flesch, Friedrich, to Longensiepen, Max, Kom, Ges: Accessory for adhesively fixing and bonding fastening elements in fixing holes. 3,703,790, Cl. 52-98.000.
- Mattes, Lee H., to Mastic Corporation. Building siding units. 3,703,795, Cl. 52-521.000.
- Maulding, Donald Roy, to American Cyanamid Company. Method of preparation of substituted diaryl oxalates. 3,704,309, Cl. 260-479.00s.
- Maxwell, Edward Ralph. Portable tree stand. 3,703,939, Cl. 182-107.000.
- Mayadas, Ashok F.: *See—*
  - Cuomo, Jerome J.; Mayadas, Ashok F.; and Rosenberg, Robert, 3,704,166.
- Mayer, Robert H., to Carrier Corporation. Coupling assembly for replacement of return bend. 3,704,035, Cl. 285-157.000.
- Maytag Company, The: *See—*
  - Landwier, William G., 3,704,170.
- Mc Coy, Michael R.; and Walther, Terry R., to Electronic Arrays, Inc. Accession system for and in integrated circuit type memories. 3,704,454, Cl. 340-173.0sp.
- Mc Fadden, Bruce R. Card reader. 3,704,360, Cl. 235-61.11.
- McCaulay, James L.: *See—*
  - Dunks, Clifford M ; and McCaulay, James L., 3,703,922.
- McCaully, Ronald J.: *See—*
  - Wei, Peter H. L.; and McCaully, Ronald J., 3,704,240.
- McClelland, Donald H.; Pankow, Herbert G.; and Wolcott, Edward O Terminal seal electrochemical device. 3,704,173, Cl. 136-135.00r.
- McClelland, Walter B., to Teletype Corporation. Method and apparatus for memory and display. 3,704,389, Cl. 315-84.500.
- McClincy, Richard J.: *See—*
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  - McCully, Charles Roland; and McCully, Charles R., 3,704,221.
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  - McCully, Charles Roland; and McCully, Charles R., 3,704,221.
- McDonald, John William, to Du Pont de Nemours, E. I., and Company. Coated article and method of making same. 3,704,157, Cl. 117-68.500.
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  - McDowell, Robert Bruce, 3,704,219.
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- McHugh, John Francis: *See—*
  - Holovka, Charles, Jr.; Demchyshyn, Bohdan; and McHugh, John Francis, 3,704,015.
- McHugh, Neil Martin; Scheurman, Clarence, III; and Schulerud, Albert Lyle, to Colgate-Palmolive Company. Drying of detergents. 3,703,772, Cl. 34-9.000.
- McIlvenna, John F., Jr.: *See—*
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- McIntosh, Alexander Charles; and Smith, Maurice Irvin, to Tel-Tone Corporation. Service observing system. 3,704,348, Cl. 179-175.20c.
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  - Weber, Abraham; and Frossard, Jacques J., 3,704,250.
- Menaker, Warren M.: *See—*
  - Boxer, Leo M.; and Boxer, Robert W., 3,703,974.
- Menhennett, Herbert E.: *See—*
  - Howard, Robert; Robinson, Prentice I.; and Menhennett, Herbert E., 3,703,949.
- Merck & Co., Inc.: *See—*
  - Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., 3,704,314.
  - Czaja, Robert F.; Grenda, Victor J.; and Chamberlin, Earl M., 3,704,249.
- Merdes, Hartmut: *See—*
  - Berger, Herbert; Gall, Rudi; Merdes, Hartmut; Stach, Kurt; Voemel, Wolfgang; and Sauer, Winfriede, 3,704,301.
- Merges, John C., Jr.: *See—*
  - Ware, Richard E.; and Merges, John C., Jr., 3,704,145.
- Merlo, Angelo Louis. Combustion microwave diagnostic system. 3,703,825, Cl. 73-116.000.
- Merriman, Inc.: *See—*
  - Wayson, Andrew J.; and O'Connell, John T., 3,703,759.
- Merryweather, Lloyd. Sprinkler head protector. 3,703,992, Cl. 239-201.000.
- Messer Griesheim GmbH: *See—*
  - Pfeuffer, Alfred; Kalkhof, Gustav; and Weber, Helmut, 3,704,012.
- Metallgesellschaft Aktiengesellschaft: *See—*
  - Nagel, Horst; Thumm, Wilhelm, Garbe, Horst; Dailey, William H.; Goedeke, Egon; and Dadazynski, Rolf, 3,704,088.
- Meuters, Gunther: *See—*
  - Preinfalk, Franz; and Meuters, Gunther, 3,703,943.
- Meyers, Edward F. Disposable, retractable thermometer jacket. 3,703,892, Cl. 128-2.00h.
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  - Freake, Ronald; Gunter, Claude Ray; Haden, Billy Harper; and Mhatre, Nagesh Shamrao, 3,704,206.
- Michelsen, Finn C. Towed underwater apparatus. 3,703,876, Cl. 114-235.00b.
- Micro-Mega: *See—*
  - Masseran, Jean, 3,703,767.
- Micromedic Systems, Inc.: *See—*
  - Sanz, Manuel Claude, 3,704,099.
- Miles Laboratories, Inc.: *See—*
  - Freake, Ronald; Gunter, Claude Ray; Haden, Billy Harper; and Mhatre, Nagesh Shamrao, 3,704,206.
- Milgram, Alvin A., to Du Pont de Nemours, E. I., and Company. Process of producing conductive gold patterns. 3,704,162, Cl. 117-212.000.
- Miller, Earl A. Artificial lighted icicle. 3,704,365, Cl. 240-10.00r.
- Miller, Earl D., Jr.; and Kindy, Ronald J., to Eagle-Picher Industries, Inc. Positioning device. 3,704,405, Cl. 318-467.000.
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- Mills, Richard M., to Puett Electrical Starting Gate, Inc. Retractable automatic breaking door for starting gates. 3,703,883, Cl. 119-15.500.
- Miniature Electronic Components Corporation: *See—*
  - Pihl, George E., 3,704,462.
- Minnesota Mining and Manufacturing Company: *See—*
  - Downs, Dan Lloyd, 3,704,023
  - Koshar, Robert J., 3,704,311.
  - Paidosh, Richard L., 3,704,369.
  - Ulseth, John W., 3,703,996.
- Minnier, Henry B.: *See—*
  - Frey, James O.; Marshall, Harry L., and Minnier, Henry B., 3,704,232.
- Minolta Camera Kabushiki Kaisha: *See—*
  - Katsuragi, Mamoru, 3,703,859.
- Minsky Opytny zavod spetsialnogo Konstruktorskogo: *See—*
  - Perminov, Evgeny Mikhailovich, 3,703,768.
- Mintech Corporation: *See—*
  - Hand, John W.; Lockwood, Don L.; and Harris, Robert K., 3,704,011.
- Mitsubishi Petrochemical Company Limited: *See—*
  - Yamaguchi, Yasuju; and Nakayama, Yujiro, 3,704,161.
- Miyagawa, Yoshiaki: *See—*
  - Umeda, Shinobu; Miyagawa, Yoshiaki; Tanaka, Yutaka; Tanaka, Yukio; and Nakamura, Ryoji, 3,703,818.
- Miyamura, Toshihide: *See—*
  - Kishida, Yukichi; Soma, Nobuo; Nakazawa, Junichi; Sato, Yoshio; Matsuda, Hidebumi; Terada, Atsusuke; Watanabe, Taiichiro; Sugimura, Yukio; Miyamura, Toshihide; Kaneko, Masanao; and Watatani, Mitsuo, 3,704,294.
- Miyauchi, Rinichi: *See—*
  - Yamanaka, Takashi; Miyauchi, Rinichi; Fujita, Hisaya; and Kaieda, Nobuo, 3,704,415.
- Mobil Oil Corporation: *See—*
  - Smith, Clarence G., 3,704,450.
- Mobus, Karl, KG Zeichnungs-Ordner: *See—*
  - Kohler, Heinz-Werner, 3,704,051.
- Mod, Robert R.; Magne, Frank C.; and Skau, Evald L., to United States of America, Agriculture. N-Cyclohexyl-N-(2-cyanoethyl) oleamide as a plasticizer. 3,704,257, Cl. 260-404.500.
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  - Bodunov, Igor Vasilievich; Modestov, Boris Sergeevich; and Ivanchenko, Viktor Vasilievich, 3,704,076.
- Moisture Register Company: *See—*
  - Lundstrom, John W., 3,704,412.
- Mold, James D.: *See—*
  - Norman, Vello; Williams, Thomas B.; Kallianos, Andrew G.; and Mold, James D., 3,703,901.
- Molins Limited: *See—*
  - Rowlands, Tom, 3,703,971.
- Monsanto Company: *See—*
  - Clark, Frank S., 3,704,277.
  - Lannert, Kent P., 3,704,320.
- Montalbano, Albert F.: *See—*
  - Forys, Edward Louis; Lofftus, Leroy A.; Malueg, Richard Milton; and Montalbano, Albert F., 3,703,999.
- Montgomery, John G.: *See—*
  - Lofstrand, Wilton S.; and Montgomery, John G., 3,703,930.

- Moore, Stephen G. Retracting bed mechanism. 3,703,735, Cl. 5-147.000.
- Morita, Teruo, to Shoketsu Kinzoku Kogyo Kabushiki Kaisha. Air stream oil injecting type oiler 3,703,940, Cl. 184-55.00a.
- Morton International, Inc.: *See—*
  - Orelup, Richard B., 3,704,106.
- Moss, Theron C.: *See—*
  - Moss, Theron V.; and Moss, Theron C., 3,703,738.
- Moss, Theron V.; and Moss, Theron C. Mop with metal headband. 3,703,738, Cl. 09/21/72.
- Motorola, Inc.: *See—*
  - Fiore, Jack C.; and Tennerstedt, M. Richard, 3,704,424.
  - Olah, Emery E., 3,703,833.
- Moulin, Jean, to Societe de Traitements Electrolytiques et Electrothermiques (Stel). Inductor arrangement for induction heating application particularly for brazing presses. 3,704,357, Cl. 219-10.790.
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- MSL Industries, Inc.: *See—*
  - Laverty, Richard C., 3,703,843.
- Muldon, Lawrence J. Bale wagon. 3,703,972, Cl. 214-519.000.
- Muller, Karl-Heinz; Rohr, Harry; and Ott, Karl-Heinz, to Bayer Aktiengesellschaft. Pencil having a formed ABS polymer barrel. 3,704,071, Cl. 401-96.000.
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- Mundy, Frank Percival, to Pict Limited. Vegetable processing apparatus. 3,703,917, Cl. 83-2.000.
- Nabisco, Inc.: *See—*
  - Ronai, Kenneth S.; and Spanier, Henry C., 3,704,134.
- Nagel, Horst; Thumm, Wilhelm; Garbe, Horst; Dailey, William H.; Goedeke, Egon; and Dadazynski, Rolf, to Metallgesellschaft Aktiengesellschaft and Steel Company of Canada, Limited, The. Method of restricting oxidation of sponge iron. 3,704,088, Cl. 21-2.500
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- Nakamura, Ryoji: *See—*
  - Umeda, Shinobu; Miyagawa, Yoshiaki; Tanaka, Yutaka; Tanaka, Yukio; and Nakamura, Ryoji, 3,703,818.
- Nakamura, Shigeaki; Nakamura, Tadao; and Kohashi, Tadao, to Matsushita Electric Industrial Company, Limited. Sintered inorganic photoconductive elements and their method of preparation. 3,704,265, Cl. 252-501.000.
- Nakamura, Shiro: *See—*
  - Hara, Kazuo, Samoto, Mistunobu; Sawai, Masanobu; and Nakamura, Shiro, 3,704,168.
- Nakamura, Tadao: *See—*
  - Nakamura, Shigeaki; Nakamura, Tadao; and Kohashi, Tadao, 3,704,265.
- Nakamura, Toru: *See—*
  - Nakae, Nobuhiro; and Nakamura, Toru, 3,704,050.
- Nakayama, Yujiro: *See—*
  - Yamaguchi, Yasuju; and Nakayama, Yujiro, 3,704,161.
- Nakazawa, Junichi: *See—*
  - Kishida, Yukichi; Soma, Nobuo; Nakazawa, Junichi; Sato, Yoshio; Matsuda, Hidebumi; Terada, Atsusuke; Watanabe, Taiichiro; Sugimura, Yukio; Miyamura, Toshihide; Kaneko, Masanao; and Watatani, Mitsuo, 3,704,294.
- National Cash Register Company: *See—*
  - Coleman, William E., 3,704,052.
- National Cash Register Company, The: *See—*
  - Frock, Brian G., 3,704,467.
  - Ikeda, Kazuhiko, 3,703,987.
  - Landis, Donald E.; Sidhu, Mohanjit S.; and Cone, Richard E., 3,703,903.
- Nelson, Arthur. Terminal clip. 3,704,439, Cl. 339-99.00r.
- Nelson, Elmer F.; and Nelson, Olive. Fishing rod holder. 3,704,000, Cl. 248-42.000.
- Nelson Muffler Corporation: *See—*
  - Nelson, Ralph H., 3,703,938.
- Nelson, Olive: *See—*
  - Nelson, Elmer F.; and Nelson, Olive, 3,704,000.
- Nelson, Ralph H., to Nelson Muffler Corporation. Exhaust muffler. 3,703,938, Cl. 181-58.000.
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- Neuworth, Martin B., to Continental Oil Company. Alkylidenedithiobisphenols. 3,704,327, Cl. 260-609.00f.
- Nevitt, Milton, to Spray Shine Incorporated. Aerosol spray polish. 3,704,143, Cl. 106-5.000.
- New Lite Industry Company Limited: *See—*
  - Konishi, Mikio, 3,703,742.
- New York University: *See—*
  - Sayre, Edward Vale, 3,704,159.
- Newman, Ira R.: *See—*
  - Shire, Harold; and Newman, Ira R., 3,704,034.
- Newman, Stanley R.; Von Allmen, Ronald W.; Dille, Kenneth L.; and Vermillion, Herbert E., to Texaco Inc. Motor fuel composition. 3,704,109, Cl. 44-66.000.
- Newmeyer, Reed A. Vehicle data recorder. 3,704,344, Cl. 346-40.000.
- Newton, George R., to Omoco Production Company. Heave-proof arctic piling. 3,703,812, Cl. 61-53.000.
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- Nicklin, Thomas, to Gas council, The. Treatment of gases. 3,704,095, Cl. 423-242.000.
- Nigro, Louis V., to Gillette Company, The. Adjustable spray rate actuator. 3,703,994, Cl. 239-397.000.
- Niinomi, Naoyuki, to Nippon Gakki Seizo Kabushiki Kaisha. Muscular voltage-controlled tone-modifying device. 3,704,339, Cl. 84-1.240.
- Nilsson, Erland: *See—*
  - Johansson, Bengt; and Nilsson, Erland, 3,704,388.
- Nilsson, Gustav Lennart. Machine to be used as a crane, loader and/or excavator. 3,703,973, Cl. 214-778.000.
- Ninagawa, Sadayoshi: *See—*
  - Yamashita, Takashi; Chida, Yugo; Ninagawa, Sadayoshi; and Kato, Tetsuya, 3,704,317.
- Nippon Electric Co., Ltd.: *See—*
  - Fukino, Katsushige, 3,704,398.
- Nippon Gakki Seizo Kabushiki Kaisha: *See—*
  - Niinomi, Naoyuki, 3,704,339.
- Nippon Steel Corporation: *See—*
  - Nishihara, Toshiro; Asano, Hidejiro; Maeda, Shigeyoshi; and Oyagi, Yashichi, 3,704,181.
- Nisenson, Stanley M.: *See—*
  - Buresh, Francis M.; Nisenson, Stanley M.; Lipscomb, Walter P.; and Saich, Anthony M., 3,704,191.
- Nishihara, Toshiro; Asano, Hidejiro; Maeda, Shigeyoshi; and Oyagi, Yashichi, to Nippon Steel Corporation. Cold rolled steel sheet having stabilized thin oxide film and having excellent resistance against corrosion particularly initial rust formation as wel as against corrosion after lacquering. 3,704,181, Cl. 148-31.500.
- Nissan Motor Company, Limited: *See—*
  - Ohie, Koichi; and Enomoto, Koji, 3,703,941.
- Nobouri, Murayama: *See—*
  - Wasaburo, Ohta; and Nobouri, Murayama, 3,704,468.
- Noguchi, Shunsaku; and Kishimoto, Shoji, to Takeda Chemical Industries, Ltd. 4-Pyrazole acetic acid compounds. 3,704,241, Cl. 260-310.00r.
- Norman, Vello; Williams, Thomas B.; Kallianos, Andrew G.; and Mold, James D., to Liggett & Myers Incorporated. Tobacco composition. 3,703,901, Cl. 131-17.00r.
- North Electric Company: *See—*
  - Patterson, Albert D., 3,704,361.
- Northrup, Richard M.: *See—*
  - Johnson, Philip M.; Dudevoir, Wilfried G.; and Northrup, Richard M., 3,704,070.
- Nuwayser, Elie S., to Abcor, Inc. Intrauterine contraceptive device. 3,703,896, Cl. 12-130.000.
- O'Brien, Kevin C., to Bell Telephone Laboratories, Incorporated. Bridge circuit utilizing pulse echo technique. 3,704,410, Cl. 324-58.00a.
- O'Connell, John Joseph: *See—*
  - Blackwell, Wayne Waldo; Earle, John Goodell; O'Connell, John Joseph; Pierce, Edwin Bruce; and Shabe, John Edward, 3,704,453.
- O'Connell, John T.: *See—*
  - Wayson, Andrew J.; and O'Connell, John T., 3,703,759.
- O'Connor, Charles A.; and Maehr, Richard J. Means for taking up slack in lead screw devices. 3,703,835, Cl. 74-441.000.
- Oga, Toshisaburo; and Okazaki, Ken, to Sumitomo Electric Industries, Ltd. Method of resin coating a metal and resin-coated metal product thereof. 3,704,176, Cl. 148-6.270.
- Ogilvie Flour Mills Company, Limited, The: *See—*
  - Hampton, Richard J.; Rolland, Jacques R.; and Gallo, Thomas, 3,704,131.
- Ohie, Koichi; and Enomoto, Koji, to Nissan Motor Company, Limited. Parking brake. 3,703,941, Cl. 188-31.000.
- Okada, Shingo: *See—*
  - Inoue, Kiyoshi; Ishikawa, Tetsuo; and Okada, Shingo, 3,703,796.
- Okamoto, Sohei: *See—*
  - Eguchi, Fusatoshi; Okamoto, Sohei; Yamaha, Mashio; Matsumoto, Nobuo; and Yokoyama, Minoru, 3,703,963.
- Okazaki, Ken: *See—*
  - Oga, Toshisaburo; and Okazaki, Ken, 3,704,176.
- Oklahoma State University: *See—*
  - Hughes, William L.; Allison, Hansel J.; and Ramakumar, Ramachandra G., 3,703,976.
- Olah, Emery E., to Motorola, Inc. Differential motion magnifying mechanism. 3,703,833, Cl. 74-10.390.
- O'Laughlin, Richard Lawrence: *See—*
  - La Via, Anthony Laurence; O'Laughlin, Richard Lawrence; and Walton, Richard Wiegmann, 3,704,138.
- Olevitch, Albert; and James, Darrell R. Laser beam reflector system. 3,703,813, Cl. 62-3.000.
- Olin Corporation: *See—*
  - Capuano, Italo A., 3,704,097.
- O.M.C.S.A. Officine Meccaniche Cigardi S.p.A.: *See—*
  - Giuiuzza, Pietro, 3,703,863.
- Omoco Production Company: *See—*
  - Newton, George R., 3,703,812.
- Ondrasik, Robert, to Patents & Technology Exclusives, Inc. Anti-skid brake system. 3,703,946, Cl. 188-181.00r.
- Ong, Sienling: *See—*
  - Feess, Erich; and Ong, Sienling, 3,704,087.
- Ono, Hisatake: *See—*

  - Honjo, Satoru; Watarai, Syu; and Ono, Hisatake, 3,704,119.
- Onozaki, Jun: *See—*
  - Makino, Katsuo; Yamada, Yoshihiko; and Onozaki, Jun, 3,704,121.
- Oomen, Johannes A. F., to Avco Corporation. Digital reflection coefficient detector. 3,704,409, Cl. 32-57.00r.
- Ooms, Owen J.: *See—*
  - Boxer, Leo M.; and Boxer, Robert W., 3,703,974.
- Optronix, Inc.: *See—*
  - Rose, Edward A.; Krohn, Richard H.; and Slater, Donald E., 3,704,461.
- Orabona, Francis A.: *See—*
  - Stoddard, James Fred; Orabona, Francis A.; and Dorval, Rodolphe A., 3,704,342.
- Orelup, Richard B., to Morton International, Inc. Colored petroleum distillate. 3,704,106, Cl. 44-59.000.
- Orwin, Olaf John Barclay, to GIB Precision Limited. Flexible couplings. 3,703,817, Cl. 64-13.000.
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- Osborne, Thomas E., to Hewlett-Packard Company. Data processing control system. 3,704,448, Cl. 340-172.500.
- Osterreichische Studiengesellschaft fur Atomenergie G.m.b.H.: *See—*
  - Stehlik, Gerhard, 3,704,089.
- Oswalt, Leon M., to Cato Oil and Grease Co. Oil change kit. 3,703,956, Cl. 206-47.00r.
- Ott, Karl-Heinz: *See—*
  - Muller, Karl-Heinz; Rohr, Harry; and Ott, Karl-Heinz, 3,704,071.
- Otto, Heinz: *See—*
  - Ganter, Wolfgang; Otto, Heinz; and King, Josef, 3,703,805.
- Owens, Vincent P.; and Prohazka, George J., to Combustion Engineering Inc. Supplemtary air cascade evaporation. 3,703,919, Cl. 159-4.00a.
- Owens-Corning Fiberglas Corporation: *See—*
  - Smucker, Clayton A., 3,704,199.
- Oyagi, Yashichi: *See—*
  - Nishihara, Toshiro; Asano, Hidejiro; Maeda, Shigeyoshi; and Oyagi, Yashichi, 3,704,181.
- Padwick, Herbert W.; and Fay, Lawrence P. Snowmobile suspension. 3,703,936, Cl. 180-5.00r.
- Page, Russell D.; Klingaman, Dean C.; and Scholl, Rolland D., to Caterpillar Tractor Co. Electro-hydraulic touch control system for earthmoving vehicles. 3,703,931, Cl. 172-4.500.
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- Panhard, Jean, to Societe de Constructions Mecaniques Panhard & Levassor. Ignition devices for internal combustion engines. 3,703,887, Cl. 123-117.00r.
- Pankow, Herbert G.: *See—*
  - McClelland, Donald H.; Pankow, Herbert G.; and Wolcott, Edward O., 3,704,173.
- Pantchenko, Gregory: *See—*
  - Smith, Avery B.; Hennig, Ralph R.; Kurtz, Abraham J.; and Pantchenko, Gregory, 3,704,098.
- Paris, Jacques M.: *See—*
  - Paris, Rene A.; Thibaudon, Dominique; Roubin, Marc P.; and Paris, Jacques M., 3,704,116.
- Paris, Rene A.; Thibaudon, Dominique; Roubin, Marc P.; and Paris, Jacques M., to Agence Nationale de Valorisation de la Recherche. Dispersions of nitrides in a metal or alloy and their method of preparation. 3,704,116, Cl. 75-.5ac.
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- Particle Data Inc.: *See—*
  - Haigh, Geoffrey T., 3,704,425.
- Pasetti, Adolfo: *See—*
  - Sianesi, Dario; Pasetti, Adolfo; and Corti, Costante, 3,704,214.
- Patents & Technology Exclusives, Inc.: *See—*
  - Ondrasik, Robert, 3,703,946.
- Patrie, Jos, to Cegedur GP. Method for electrochemical coloring of aluminum and alloys. 3,704,209, Cl. 204-35.00n.
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- Pauls, James D.: *See—*
  - Boxer, Leo M.; and Boxer, Robert W., 3,703,974.
- Pauly, Ronald R.: *See—*
  - Pfeilsticker, Lee J.; and Pauly, Ronald R., 3,703,785.
- Pavlov, Nikolai Ivanovich: *See—*
  - Kusovsky, Boris Isaakovich; Pavlov, Nikolai Ivanovich; Matiichenko, Anatoly Petrovich; Zakharov, Sergei Alexandrovich; and Birjukov, Dmitry Anatolievich, 3,704,222.
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- Pearson, Harry C., to Portland Iron Works. Thin kerf saw machinery. 3,703,915, Cl. 143-160.00g.
- Pearson, Paul O.: *See—*
  - Epina, August P.; and Pearson, Paul O., 3,703,997.
- Pearson, Samuel Reader, to Texas Instruments, Incorporated. Automatic data retrieval and display system. 3,704,451, Cl. 340-172.500.
- Pecksen, Otto: *See—*
  - Madlener, Paul; and Pecksen, Otto, 3,703,867.
- Peerless Mfg. Co.: *See—*
  - Davis, Leo W.; Lackey, Marion D.; Ross, John Reuben; and Trenary, Bryant, 3,704,040.
- Pemko Manufacturing Co.: *See—*
  - Rivers, Victor J., 3,703,788.
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  - Eckert, Hans-Werner; and Perner, Johannes Jurgen, 3,704,228.
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  - Waly, Adnan, 3,704,068.
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  - Hill, William H., 3,704,227.
- Peterson, Weldon H.: *See—*
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  - Bayew, Dimiter; Daeuble, Manfred; Kaufmann, Otto; Ludsteck, Dieter; Pfitzner, Helmut; and Witsch, Heinz-Guenter, 3,704,086.
- Pfleger, Frederick W. Plural column changeable display mechanism. 3,703,778, Cl. 40-32.000.
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  - Dixon, Rolland E.; and Sherk, Fred T., 3,704,334.
- Phillips, Prella M., to Dow Chemical Company, The. Process for preparing polyurethanes. 3,704,270, Cl. 260-77.5ac.
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  - Digney, Frank J., Jr.; and Phinney, Earl M., 3,704,393.
- Phipps, Arthur L. Extrusion machine. 3,704,083, Cl. 425-71.000.
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  - Ingram, Brian; Harries, David A., and Phoenix, Lancelot, 3,704,044.
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  - Mundy, Frank Percival, 3,703,917.
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  - Blackwell, Wayne Waldo; Earle, John Goodell; O'Connell, John Joseph; Pierce, Edwin Bruce; and Shabe, John Edward, 3,704,453.
- Pietzonka, Helmut; and Schindler, Hans, to Braun Aktiengesellschaft. Arrangement of ignition electrodes of electrically ignited gas lighters. 3,704,085, Cl. 431-264.000.
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- Pneumatic separator, filter and particle conveying: *See—*
  - Swanson, Kenneth W.; Rolland, William C.; and Kraft, Michael J., 3,703,957.
- Podschus, Ernst: *See—*
  - Lepold, Manfred F.; Heinze, Gerhard; Kaule, Gustav; and Podschus, Ernst, 3,703,797.
- Polaroid Corporation: *See—*
  - Land, Edwin H.; Bloom, Stanley M.; and Farney, Leonard C., 3,704,126.
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- Pollution Control Industries, Inc.: *See—*

  - Verses, Christ J.; and Karlson, Eskil L., 3,704,096.
- Pommer, Edwin B., to Blumenthal, B., & Co., Inc. Machine and method for card mounting shanked buttons. 3,703,760, Cl. 29-433.000.
- Pool, Samuel T. Trot line caster. 3,703,783, Cl. 43-54.50a.
- Poole, John W.: *See—*
  - Hou, Joseph P.; and Poole, John W., 3,704,290.
- Porter, Bobby J.: *See—*
  - McLain, John H.; and Porter, Bobby J., 3,704,165.
- Porter, Verleon Henry, to Du Pont de Nemours, E. I., and Company. Dispersion polymerization of tetrafluoroethylene. 3,704,285, Cl. 260-87.50a.
- Portland Iron Works: *See—*
  - Pearson, Harry C., 3,703,915.
- Pourrias, Bernard M.: *See—*
  - Fauran, Claude P.; Turin, Michel J.; Raynaud, Guy M.; and Pourrias, Bernard M., 3,704,305.
- PPG Industries, Inc.: *See—*
  - Allen, Edward Merle, 3,704,102.
- Prahl, Helmut F.; and Hart, Frederick M., to Dynatron Research Corporation. Polyolefin-starch. 3,704,271, Cl. 260-17.4gc.
- Preinfalk, Franz; and Meuters, Gunther, to August Thyssen-Hutte AG. Deformable track brake. 3,703,943, Cl. 188-62.000.
- Prell, Raymond A.: *See—*
  - Ruf, Franz X.; Chase, Wayne R.; and Prell, Raymond A., 3,703,881.
- Prentice Corporation: *See—*
  - Elsenheimer, Charles W., 3,703,822.
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- Procter & Gamble Company, The: *See—*
  - Strobel, Rudolf G. K., 3,704,132.
- Productions Essemes S.A.: *See—*
  - Barrat, Bernard, 3,703,793.
- Prohazka, George J.: *See—*
  - Owens, Vincent P.; and Prohazka, George J., 3,703,919.
- Pruessner, Harold T. Method and apparatus of centrifugal separation. 3,703,984, Cl. 233-28.000.
- Pryor, David J.: *See—*
  - Kadron, Stanley F.; Eisenhauer, Gary L.; Pryor, David J.; and Chacon, Raul J., 3,704,423.
- Puett Electrical Starting Gate, Inc.: *See—*
  - Mills, Richard M., 3,703,883.
- Questor Corporation: *See—*
  - Kusel, Edward J., 3,704,005.
- Quick Service Textiles, Inc.: *See—*
  - Miller, Samuel E., 3,703,730.
- Radd, Frederick J.: *See—*
  - Spangler, Carl D., Jr.; Radd, Frederick J.; and Wolfe, Louis H., 3,704,333.
- Rai, Charanjit: *See—*
  - El-Mogazi, Mohamed M.; and Rai, Charanjit, 3,704,330.
- Ralston Purina Company: *See—*
  - Hale, Douglas; Manuel, James C.; and Beck, Nicholas R., 3,704,135.
- Ramakumar, Ramachandra G.: *See—*
  - Hughes, William L.; Allison, Hansel J.; and Ramakumar, Ramachandra G., 3,703,976.
- Ramm, Eric John: *See—*
  - Reeve, Keith Desmond; and Ramm, Eric John, 3,704,202.
- Randall, David I.: *See—*
  - Freyermuth, Harlan B.; and Randall, David I., 3,704,243.
- Randell, Richard, to Tracked Hovercraft Limited. Track guided vehicle. 3,703,869, Cl. 104-23.0fs.
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- Rassat, Andre; and Ronzaud, Jacques. Stable free radicals of the nitroxide type derived from tropane ring compounds. 3,704,235, Cl. 260-292.000.
- Rauth, James A.: *See—*
  - Smith, William C.; and Rauth, James A., 3,704,426.
- Rawson, James L.; and Rawson, Leslie E. Speed control apparatus. 3,703,810, Cl. 60-97.00s.
- Rawson, Leslie E.: *See—*
  - Rawson, James L.; and Rawson, Leslie E., 3,703,810.
- Raymond, Julius R., to CCI Aerospace Corporation. Disposable recirculating dialysate module. 3,703,959, Cl. 210-87.000.
- Raynaud, Guy M.: *See—*
  - Fauran, Claude P.; Turin, Michel J.; Raynaud, Guy M.; and Pourrias, Bernard M., 3,704,305.
- RCA Corporation: *See—*
  - Burtis, Stokes Fenimore, 3,704,207.
  - Russo, Robert Ritter, 3,704,208.
- Reader, Charles T.; and Renz, John F. Monitoring system utilizing amplitude coding of signals remote to central. 3,704,447, Cl. 340-172.000.
- Redman Industries, Inc., mesne: *See—*
  - Honeycutt, Don R., 3,703,850.
- Reed, Ray Allen: *See—*
  - Ault, Cyrus Frank; Reed, Ray Allen; and Reichert, William George, Jr., 3,704,383.
- Reese, Edward E.: *See—*
  - Sammartino, Michael; and Reese, Edward E., 3,703,978.
- Reeve, Keith Desmond; and Ramm, Eric John, to Australian Atomic Energy Commission. Fuel element for high temperature nuclear reactor. 3,704,202, Cl. 176-68.000.
- Regie Nationale des Usines Renault: *See—*
  - Bailleux, Gilles, 3,704,029.
  - Fourntег, Roger, 3,704,213.
  - Pillot, Maurice; and Kilian, Louis, 3,703,847.
  - Slehofer, Ladislav, 3,704,379.
- Reichert, William George, Jr.: *See—*
  - Ault, Cyrus Frank; Reed, Ray Allen; and Reichert, William George, Jr., 3,704,383.
- Reid, James Paul, Jr.; and Deskins, David S., to Burlingtrn Industries, Inc. Gas phase reactor. 3,703,773, Cl. 34-159.000.
- Renner, Eskhard; and Linnenbecker, Udo, to Vereinigte Flugtechnische Werke-Fokker GmbH. Multiple unit, hydraulic actuator. 3,703,849, Cl. 91-412.000.
- Renz, John F.: *See—*
  - Reader, Charles T.; and Renz, John F., 3,704,447.
- Republic Steel Corporation: *See—*
  - Perry, Thomas E., 3,704,013.
- Resource Control, Inc.: *See—*
  - Smith, Avery B.; Hennig, Ralph R.; Kurtz, Abraham J.; and Pantchenko, Gregory, 3,704,098.
- Reynolds, Alex B.: *See—*
  - Tickett, Edward F., 3,703,906.
- Reynolds Metals Company: *See—*
  - Harrison, Maurice Clark; and Vancil, Donald Otis, 3,704,092.
  - Wilson, Calvin L., 3,704,142.
- Rheinfelder, William A., to Anaconda Astrodata Co. Automatic compensation of cable television systems. 3,704,419, Cl. 325-308.000.
- Rice, Ivan G., to De Laval Turbine Inc. Combined gas-steam turbine power plant. 3,703,807, Cl. 60-39.18b.
- Richards, George B. Fluid amplifiers. 3,703,907, Cl. 137-81.500.
- Richardson Company, The: *See—*
  - Kmet, Thomas J.; and Loboda, Jon A., 3,704,321.
- Ricoh Co., Ltd.: *See—*
  - Wasaburo, Ohta; and Nobouri, Murayama, 3,704,468.
- Rindtorff, Ermbrecht; and Ester, Wilhelm, to Veba-Chemie Aktiengesellschaft. Catalytic hydration of olefins to alcohols. 3,704,329, Cl. 260-641.000.
- Rivers, Victor J., to Pemko Manufacturing Co. Automatic door bottom. 3,703,788, Cl. 49-307.000.
- Robak, Edward, to Technicolor, Inc. Folding mirror and screen assembly. 3,704,054, Cl. 350-123.000.
- Robb, Morse. Viewscope for the blind. 3,704,378, Cl. 250-222.000.
- Roberts, George Wavell, to Gravoki Systems Limited, mesne. Compressible liquid device. 3,703,852, Cl. 92-60.500.
- Robertshaw Controls Company: *See—*
  - Branson, Charles D.; and Genbauffe, Francis S., 3,703,988.
- Robinson, Prentice I.: *See—*
  - Howard, Robert; Robinson, Prentice I.; and Menhennett, Herbert E., 3,703,949.
- Rochelmeyer, Hans: *See—*
  - Eich, Eckart; and Rochelmeyer, Hans, 3,704,233.
- Roeder, George K. Downhole hydraulic pump and engine improvements. 3,703,926, Cl. 166-106.000.
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- Rohan, George Alexander. Treatment of powdered chalk. 3,704,158, Cl. 117-100.00b.
- Rohr, Harry: *See—*
  - Muller, Karl-Heinz; Rohr, Harry; and Ott, Karl-Heinz, 3,704,071.
- Rolland, Jacques R.: *See—*
  - Hampton, Richard J.; Rolland, Jacques R.; and Gallo, Thomas, 3,704,131.
- Rolland, William C.: *See—*
  - Swanson, Kenneth W.; Rolland, William C.; and Kraft, Michael J., 3,703,957.
  - Swanson, Kenneth W.; Rolland, William C.; and Kraft, Michael J., 3,703,958.
- Ronai, Kenneth S.; and Spanier, Henry C., to Nabisco, Inc. Process for preparing an instant oat cereal. 3,704,134, Cl. 99-83.000.
- Ronzaud, Jacques: *See—*
  - Rassat, Andre; and Ronzaud, Jacques, 3,704,235.
- Rorer, William H., Inc.: *See—*
  - Diamond, Julius, 3,704,313.
- Rose, Edward A.; Krohn, Richard H.; and Slater, Donald E., to Optronix, Inc. Intrusion detection system responsive to interruption of a transmitted beam. 3,704,461, Cl. 340-258.00b.
- Rosenberg, Edgar N., to United States of America, Navy. Hydrodynamic transducer. 3,704,443, Cl. 340-8.00r.
- Rosenberg, Robert: *See—*
  - Cuomo, Jerome J.; Mayadas, Ashok F.; and Rosenberg, Robert, 3,704,166.
- Rosin, Jacob, to Stauffer Chemical Company. Hydrolysis of ethyl silicate. 3,704,263, Cl. 252-309.000.
- Ross, John Reuben: *See—*

  - Davis, Leo W.; Lackey, Marion D.; Ross, John Reuben; and Trenary, Bryant, 3,704,040.
- Roubin, Marc P.: *See—*
  - Paris, Rene A.; Thibaudon, Dominique; Roubin, Marc P.; and Paris, Jacques M., 3,704,116.
- Rowlands, Tom, to Molins Limited. Apparatus for feeding rod-like articles such as cigarettes. 3,703,971, Cl. 214-302.000.
- Ruf, Franz X.; Chase, Wayne R.; and Prell, Raymond A., to United States of America, Air Force. Apparatus for ultra-high vacuum in situ thin film studies. 3,703,881, Cl. 118-9.000.
- Russell, Peter B.: *See—*
  - Wolfe, Milton; Diebold, James L.; Russell, Peter B.; and Bell, Stanley C., 3,704,292.
- Russell, Peter B.; Fletcher, Horace, III; and Alburn, Harvey E., to American Home Products Corporation. Bialicyclic amino acids. 3,704,312, Cl. 260-514.00r.
- Russell, William N.: *See—*
  - Twilley, Ian C.; Russell, William N.; and Peterson, Weldon H., 3,704,100.
- Russo, Robert Ritter, to RCA Corporation. Process for forming a conductive coating on a substrate. 3,704,208, Cl. 204-15.000.
- Rutgerswerke Aktiengesellschaft: *See—*
  - Buffleb, Herbert; Franck, Heinz-Gerhard; Turowski, Johannes, Collin, Gerd; and Zander, Maximilian, 3,704,331.
- Ruti Machinery Works Ltd.; formerly Caspar Honegger: *See—*
  - Freisler, Erhard, 3,703,914.
- Ryazansky Filial Spetsialnogo Konstruktorskogo Bjuro Ann: *See—*
  - Kusovsky, Boris Isaakovich; Pavlov, Nikolai Ivanovich; Matiichenko, Anatoly Petrovich; Zakharov, Sergei Alexandrovich; and Birjukov, Dmitry Anatolievich, 3,704,222.
- Saich, Anthony M.: *See—*
  - Buresh, Francis M.; Nisenson, Stanley M.; Lipscomb, Walter P.; and Saich, Anthony M., 3,704,191.
- Saito, Tatsuo; Akahide, Kozo; and Ukebe, Teruo, to Kawasaki Steel Corporation. Submerged-arc both-side butt welding method of a square groove. 3,704,358, Cl. 219-73.000.
- Salmassy, Oscar E.; and Sullivan, Robert E., to International Business Machines Corporation. Statistical and environmental data logging system for data processing storage subsystem. 3,704,363, Cl. 235-153.000.
- Sammartino, Michael; and Reese, Edward E. Collapsible garment hanger. 3,703,978, Cl. 223-89.000.
- Samoto, Mistunobu: *See—*
  - Hara, Kazuo; Samoto, Mistunobu; Sawai, Masanobu; and Nakamura, Shiro, 3,704,168.
- Sanderford, Freeman M.: *See—*
  - Valdo, Alex R.; and Sanderford, Freeman M., 3,704,117.
- Sandoz-Wander, Inc.: *See—*
  - Hardtmann, Goetz E., 3,704,300.
- Sankyo Company Limited: *See—*
  - Kishida, Yukichi; Soma, Nobuo; Nakazawa, Junichi; Sato, Yoshio; Matsuda, Hidebumi; Terada, Atsusuke; Watanabe, Taiichiro; Sugimura, Yukio; Miyamura, Toshihide; Kaneko, Masanao; and Watatani, Mitsuo, 3,704,294.
- Santilli, Arthur A.; and Kim, Havertown Dong H., to American Home Products Corporation. 5-Hydroxy-3-alkyl-1-(thiocarbamoyl or alkylthiocarbamoyl)-pyrazole-4-alkanoic acid derivatives. 3,704,242, Cl. 260-310.00r.
- Sanz, Manuel Claude, to Micromedic Systems, Inc. Coagulometer. 3,704,099, Cl. 23-253.00r.
- Saran, Herbert; and Budnowski, Manfred, to Henkel & Cie G.m.b.H. Molding materials based on epoxide compounds and process. 3,704,281, Cl. 260-77.5nc.
- Sargrove, John Adolph, to Imperial Tobacco Company (of Great Britain and Ireland) Limited, The. Apparatus for making cigar bunches. 3,703,902, Cl. 131-22.00a.
- Sato, Katsunobu: *See—*
  - Enomoto, Sigeharu; Sato, Katsunobu; and Suzuki, Goichi, 3,704,302.
- Sato, Shigeta: *See—*
  - Kato, Masaaki; and Sato, Shigeta, 3,704,218.
- Sato, Yoshinari: *See—*
  - Umio, Suminori; Ueda, Ikuo; Sato, Yoshinari; and Maeno, Shizuo, 3,704,245.
- Sato, Yoshio: *See—*
  - Kishida, Yukichi; Soma, Nobuo; Nakazawa, Junichi; Sato, Yoshio; Matsuda, Hidebumi; Terada, Atsusuke; Watanabe, Taiichiro; Sugimura, Yukio; Miyamura, Toshihide; Kaneko, Masanao; and Watatani, Mitsuo, 3,704,294.
- Sauer, Winfriede: *See—*
  - Berger, Herbert; Gall, Rudi; Merdes, Hartmut; Stach, Kurt; Voemel, Wolfgang; and Sauer, Winfriede, 3,704,301.
- Saunders Archery Co.: *See—*
  - Saunders, Thomas Allen; and Saunders, Eugene F., 3,703,728.
- Saunders Archery Company: *See—*
  - Saunders, Charles A., 3,703,771.
- Saunders, Charles A., to Saunders Archery Company. Bowstring-mounted peep sight. 3,703,771, Cl. 33-265.000.
- Saunders, Eugene F.: *See—*
  - Saunders, Thomas Allen; and Saunders, Eugene F., 3,703,728.
- Saunders, Milton A., Jr. Skin patch test device. 3,703,890, Cl. 128-2.00w.
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- Sawai, Masanobu: *See—*
  - Hara, Kazuo; Samoto, Mistunobu; Sawai, Masanobu; and Nakamura, Shiro, 3,704,168.
- Sawato, Iwao: *See—*
  - Makino, Katsuo; and Sawato, Iwao, 3,704,123.
- Sayre, Edward Vale, to New York University. Method of protecting and preserving stone objects. 3,704,159, Cl. 117-123.
- Scarbrough, Alfred D. 3D-coaxial memory construction and method of making. 3,704,455, Cl. 340-173.0sp.
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- Schauffler, David J., to Bendix Corporation, The. Flexure bearing with low rotational restraint. 3,703,831, Cl. 74-5.000.
- Scheurman, Clarence, III: *See—*
  - McHugh, Neil Martin; Scheurman, Clarence, III, and Schulerud, Albert Lyle, 3,703,772.
- Schick, Margery L.: *See—*
  - Anderson, Bror E.; and Schick, Margery L., 3,704,155.
- Schindler, Hans: *See—*
  - Pietzonka, Helmut; and Schindler, Hans, 3,704,085.
- Schlachter, Donald A. Skin effect RF bridge filter. 3,704,434, Cl 333-75.000.
- Schlaudroff, Leo M., to General Electric Company. Method for precisely forming and placing insulation in the slots of magnetic cores. 3,703,854, Cl. 93-1.00g.
- Schleyer, Meinolf: *See—*
  - Lichtenvort, Uwe; Kluge, Johannes; and Schleyer, Meinolf, 3,704,355.
- Schlicht, Raymond C.; Eckert, George W.; and Von Allmen, Ronald W., to Texaco, Inc. Fuel composition. 3,704,107, Cl. 44-58.000.
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- Schmitt, Arthur N., to Western Geophysical Company of America Seismic data processing method and system. 3,704,444, Cl. 340-15.5dp.
- Schnell, Georg: *See—*
  - Hartmann, Hans Joerg; Schnell, Georg; Werst, Gerhard; Grosselfinger, Horst; Hartmann, Job-Werner; and Bipp, Hansjoerg, 3,704,152.
- Schoeps, Knut Christian, to Atlas Copco Aktiebolag. Impact wrench with torque control means. 3,703,933, Cl. 173-12.000.
- Scholl, Rolland D.: *See—*
  - Page, Russell D.; Klingaman, Dean C.; and Scholl, Rolland D., 3,703,931.
- Schrader, Paul G., to Dow Chemical Company, The. Secured plasticized acetylated cellulose hollow fiber membranes. 3,703,962, Cl. 210-321.000.
- Schreiner, James W. Sprinkler deflector. 3,703,993, Cl. 239-231.000.
- Schroeder, Thaddeus, to General Motors Corporation. Controlled rectifier firing system with voltage compensation. 3,704,408, Cl. 321-5.000.
- Schulerud, Albert Lyle: *See—*
  - McHugh, Neil Martin; Scheurman, Clarence, III, and Schulerud, Albert Lyle, 3,703,772.
- Schulte, Alfons, to Johann Borgers KG, Firma. Apparatus for making a pattern on a fibrous web. 3,703,752, Cl. 28-4.00r.
- Schwabische Huttenwerke Gesellschaft mit beschrankter Haftung: *See—*
  - Gessler, Hans, 3,703,967.
- Schwartz, Martin L.: *See—*
  - Zinnes, Harold; Schwartz, Martin L.; and Shavel, John, Jr., 3,704,298.
- Schweitzer, John C.; and Junak, Edward M., to Delta Products, Inc. Piezoelectric transducer assembly with phase shifting accoustical ports. 3,704,385, Cl. 310-8.200.
- Schwinum, Ernst: *See—*
  - Mader, Rudolf Mayer; and Schwinum, Ernst, 3,704,283.
- Scott, James B.: *See—*
  - Smith, Lloyd M.; Scott, James B., and Wertz, William H., 3,704,346.
- Scott Paper Company: *See—*
  - Kitch, Paul E., 3,704,069.
- Scovill, Warner E.; and Day, Donald R., to Standard Oil Company, The (Ohio). Process for manufacture of improved needle coke from petroleum. 3,704,224, Cl. 208-131.000.
- Searle, G. D., & Co.: *See—*
  - Krimmel, Carl Peter, 3,704,306.
- Seeley, William G.: *See—*
  - Lehovec, Kurt; and Seeley, William G., 3,704,376.
- Semenza, Eugene, to United States of America, Air Force. Delay arming mechanism. 3,703,866, Cl. 102-70.00s.
- Severodonetsky Filial Niihimmash: *See—*
  - Bodunov, Igor Vasilievich; Modestov, Boris Sergeevich; and Ivanchenko, Viktor Vasilievich, 3,704,076.
- Shabe, John Edward: *See—*
  - Blackwell, Wayne Waldo; Earle, John Goodell; O'Connell, John Joseph; Pierce, Edwin Bruce; and Shabe, John Edward, 3,704,453.
- Shafer, Merrill W., to International Business Machines Corporation. Anionic doped divalent europium chalcogenides. 3,704,278, Cl. 252-62.510.

Shaffer, Walter M.; and Crawford, John T., to Towmotor Corporation. Process of placing a lead in a space with a lift truck. 3,703,969, Cl. 214-152.000.
Shah, Bhupendra Umedchand: *See—*
Whisler, Howard E.; Shah, Bhupendra Umedchand; Jeskey, Gerald Vernon; and Bloom, Ray Albert, 3,703,924.
Shavel, John, Jr.: *See—*
Strandtmann, Maximilian Von; Cohen, Marvin P.; and Shavel, John, Jr., 3,704,234.
Zinnes, Harold; Schwartz, Martin L.; and Shavel, John, Jr., 3,704,298.
Shay, Barry Michael, to ICI America Inc. Non-swelling texturing spin finish. 3,704,225, Cl. 252-8.900.
Shell Oil Company: *See—*
Strang, Aart, 3,704,315.
Shelton, Everett T., Jr.: *See—*
Gilbertson, Warren L.; Shelton, Everett T., Jr.; and Southall, Hobert M., 3,703,865.
Shelton, William L., to United States of America, Air Force. Radiographic inspection technique. 3,704,370, Cl. 250-65.00r.
Shen, Yuan-Shou: *See—*
Griffiths, Leonard B.; and Shen, Yuan-Shou, 3,704,182.
Sherk, Fred T.: *See—*
Dixon, Rolland E.; and Sherk, Fred T., 3,704,334.
Shimizu, Sakae: *See—*
Yamaguchi, Nario; Shimizu, Sakae; and Tubuko, Kazuo, 3,704,122.
Shire, Harold; and Newman, Ira R., to General Connectors Corporation. Offset connector. 3,704,034, Cl. 285-47.000.
Shiro, Teruo; Takinami, Koichi; Akutsu, Eiichi; Yoshii, Hiroe; and Yamada, Yasutsugu, to Ajinomoto Co., Inc. Method of producing l-glutamic acid by fermentation. 3,704,205, Cl. 195-114.000.
Shoketsu Kinzoku Kogyo Kabushiki Kaisha: *See—*
Morita, Teruo, 3,703,940.
Shone, Robert L.; and Findley, Thomas W., to Swift & Company. Flame-resistant polyurethanes. 3,704,256, Cl. 260-404.500.
Shore, Robert Eugene. Book for teaching reading. 3,704,338, Cl. 35-35.00e.
Short, Franklin W.: *See—*
Kaltenbronn, James S.; and Short, Franklin W., 3,704,328.
Shovel Supply Co., Inc.: *See—*
Kiser, Warren C., 3,703,836.
Sianesi, Dario; Pasetti, Adolfo; and Corti, Costante. Montecatini Edison S.p.A. Process for preparing perfluorinated linear polyethers. 3,704,214, Cl. 204-158.000.
Siddall, John B.: *See—*
Henrick, Clive A.; and Siddall, John B., 3,704,258.
Sidhu, Mohanjit S.: *See—*
Landis, Donald E.; Sidhu, Mohanjit S.; and Cone, Richard E., 3,703,903.
Siemens & Halske Aktiengesellschaft: *See—*
Heywang, Walter, 3,704,427.
Siemens Aktiengesellschaft: *See—*
Leitgeb, Wilhelm, 3,704,402.
Sigmon, Bernard E., to Sperry Rand Corporation. Negative resistance diode coaxial cavity oscillator with resistor for suppression undesired modes. 3,704,429, Cl. 331-101.000.
Silver, Jules: *See—*
Zackheim, Eli A., 3,703,898.
Simone, Roy R. De; and Linton, Richard H., to International Business Machines Corporation. Monolithic capacitor structure. 3,704,384, Cl. 307-304.000.
Sims, John C., Jr.; and Brace, Lloyd D., Jr., to Information Transfer Corporation. Tactile response teaching system. 3,704,337, Cl. 35-9.
Sinclair Oil Corporation: *See—*
Vrbaski, Theodor; Vitchus, Bernard C.; and Koncos, Robert, 3,704,251.
Sinclair-Koppers Company: *See—*
Immel, Richard H., 3,704,081.
Singleton, Robert J.: *See—*
Loveland, Malcolm W.; and Singleton, Robert J., 3,704,041.
Sivertsen, David R.: *See—*
Kinstley, Warren O.; and Sivertsen, David R., 3,704,216.
Skandinavisk Foto Trade AB: *See—*
Sundsten, Owe Wilhelm; and Johansson, Karl Bertil Sune, 3,703,916.
Skarzynski, Maciej Stanislaw. Disconnectable couplings. 3,704,002, Cl. 251-149.600.
Skau, Evald L.: *See—*
Mod, Robert R.; Magne, Frank C.; and Skau, Evald L., 3,704,257.
Skorcz, Joseph A. L-Tyrosyl-1-aminocyclopentane-1-carbonyl-L-phenylalanine. 3,704,288, Cl. 260-112.500.
Skorcz, Joseph A.; Suh, John T.; and Judd, Claude I. 5-Oxomorpholinyl-2,1-benzisothiazolines. 3,704,299, Cl. 260-247.100.
Slack, Vaughn H.; and Koens, Gilliaan Peter, to Farm Automatic Feeding Limited. Raw organic material cooker. 3,703,861, Cl. 99-443.000.
Slade, Herbert J. Window well cover. 3,703,791, Cl. 52-107.000.
Slater, Donald E.: *See—*
Rose, Edward A.; Krohn, Richard H.; and Slater, Donald E., 3,704,461.
Slawek, Joseph E., Jr.; and Altemose, Harvey W., to Barnes Engineering Company. Monolithic detector construction of photodetectors. 3,704,375, Cl. 250-211.00j.
Slehofer, Ladislav, to Automobiles Peugeot and Regie Nationale des Usines Renault. Electrical system for an automatic vehicle. 3,704,379, Cl. 307-10.00r.
Sloop, Clifford E. Mounting bracket. 3,704,001, Cl. 248-221.000.
Smith, Avery B.; Hennig, Ralph R.; Kurtz, Abraham J.; and Pantchenko, Gregory, to Resource Control, Inc. Colorimetric indicator solution for the detection of nitrogen dioxide and method of analysis. 3,704,098, Cl. 23-232.00r.
Smith, Clarence G., to Mobil Oil Corporation. Seismic trace centerline generator. 3,704,450, Cl. 340-172.600.
Smith, George M., to Textron Inc. Mechanism for containing a nail package and feeding successive nails therefrom. 3,703,981, Cl. 227-136.000.
Smith, Herchel: *See—*
Stein, Reinhardt P.; and Smith, Herchel, 3,704,253.
Smith, James: *See—*
Boxer, Leo M.; and Boxer, Robert W., 3,703,974.
Smith, Lloyd M.; Scott, James B.; and Wertz, William H., to Commatic Systems. Telephone switching and forwarding system. 3,704,346, Cl. 179-18.0be.
Smith, Maurice Irvin: *See—*
McIntosh, Alexander Charles; and Smith, Maurice Irvin, 3,704,348.
Smith, Milton Louis: *See—*
Jones, Joseph Kennedy; and Smith, Milton Louis, 3,703,966.
Smith, Russell G., to Xomox Corporation. Means to prevent external plug valve leakage. 3,703,910, Cl. 137-375.000.
Smith, Rymer H.: *See—*
Wikel, David C.; and Smith, Rymer H., 3,703,856.
Smith, Wilbur C., to Worthington Corporation. Oil boom with continuous conduit therethrough. 3,703,811, Cl. 61-1.00f.
Smith, William C.; and Rauth, James A. Phase locked detector system. 3,704,426, Cl. 329-122.000.
Smithgall, Harry E.: *See—*
Carpenter, Mark E.; and Smithgall, Harry E., 3,704,387.
Smucker, Clayton A., to Owens-Corning Fiberglas Corporation. Production of coated fibers and coating composition. 3,704,199, Cl. 161-157.000.
Sobchak, Frank L.: *See—*
Bardwell, Francis G.; Dobrauz, John W.; and Sobchak, Frank L., 3,704,373.
Societe de Constructions Mecaniques Panhard & Levassor: *See—*
Panhard, Jean, 3,703,887.
Societe de Traitements Electrolytiques et Electrothermiques (Stel): *See—*
Moulin, Jean, 3,704,357.
Societe Rhodiaceta: *See—*
Blanc, Charles; and Joly, Jean, 3,703,754.
Soehngen, John William; Wagner, William Sherwood; Jamison, Saunders Eliot; and Canfield, Dale Kelley. Process of making tobacco smoke filters from extruded polymer and binder. 3,704,192, Cl. 156-167.000.
Sofield, Howard S. Adjustable string peep. 3,703,770, Cl. 33-265.000.
Sohner, Gerhard: *See—*
Bodig, Bernd; Sohner, Gerhard; and Strelow, Gert, 3,703,889.
Soja, Joseph: *See—*
Korb, Lawrence J.; and Soja, Joseph, 3,704,366.
Sollogoub, Nicolas; and Bloc , Jean A., to Agence Katimavik Inc. Display system for moving subway trains. 3,704,064, Cl. 352-100.000.
Soma, Nobuo: *See—*
Kishida, Yukichi; Soma, Nobuo; Nakazawa, Junichi; Sato, Yoshio; Matsuda, Hidebumi; Terada, Atsusuke; Watanabe, Taiichiro; Sugimura, Yukio; Miyamura, Toshihide; Kaneko, Masanao; and Watatani, Mitsuo, 3,704,294.
Song, John, to American Cyanamid Company. Hydrocarbon-bridged thiomethylenephenol antioxidants. 3,704,326, Cl. 260-609.00f.
Southall, Hobert M.: *See—*
Gilbertson, Warren L.; Shelton, Everett T., Jr.; and Southall, Hobert M., 3,703,865.
Spangler, Carl D., Jr.; Radd, Frederick J.; and Wolfe, Louis H., to Continental Oil Company. Thermal decomposition of organic compounds. 3,704,333, Cl. 260-683.000.
Spanier, Henry C.: *See—*
Ronai, Kenneth S.; and Spanier, Henry C., 3,704,134.
Spearhead, Inc.: *See—*
Hardway, Edward V., Jr., 3,703,893.
Spector, Sidney. Catecholamine antigens and antibodies specific therefor. 3,704,282, Cl. 260-78.00a.
Sperry Rand Corporation: *See—*
Blane, Henry R., 3,704,421.
Greiner, James G.; and Brelsford, John E., 3,704,028.
Sigmon, Bernard E., 3,704,429.
Sperry Sun Well Surveying Company: *See—*
indsey, James M., 3,704,406.
Lindsey, James M., 3,704,407.
Sperry-Sun Well Surveying Company: *See—*
Lindsey, James M.; and Stell, Thomas W., 3,703,832.
Spray Shine Incorporated: *See—*
Nevitt, Milton, 3,704,143.
Squibb, E. R., & Sons, Inc.: *See—*
Bodanszky, Miklos, 3,704,246.
Krapcho, John, 3,704,323.
La Via, Anthony Laurence; O'Laughlin, Richard Lawrence; and Walton, Richard Wiegmann, 3,704,138.
Stach, Kurt: *See—*

Berger, Herbert; Gall, Rudi; Merdes, Hartmut; Stach, Kurt; Voemel, Wolfgang; and Sauer, Winfriede, 3,704,301.
Staff & Schwarz G.m.b.H.: *See—*
Lemgo-Lippe, Kurt Hesse, 3,704,437.
Stamicarbon N.V.: *See—*
Geus, John W., 3,704,226.
Standard Oil Company (Indiana): *See—*
Piasek, Edmund J.; and Karll, Robert E., 3,704,308.
Standard Oil Company, The (Ohio): *See—*
Scovill, Warner E.; and Day, Donald R., 3,704,224.
Staples, John L.: *See—*
Elliott, Brian J.; and Staples, John L., 3,704,416.
Star Lifeline Limited: *See—*
Higgs, William York, 3,703,736.
Stark, Adolf F.; Kolbeck, Winfried; and Bayerlein, Friedrich J., to Diamalt Aktiengesellschaft. Process for the production of N-carbamides of amino acids containing thiol groups. 3,704,318, Cl. 260-534.00s.
Starks, Charles M.: *See—*
Washecheck, Paul H.; and Starks, Charles M., 3,704,319.
Stauffer Chemical Company: *See—*
Rosin, Jacob, 3,704,263.
Tilles, Harry; and Brokke, Mervin E., 3,704,236.
Toy, Arthur D. F.; and Walsh, Edward N., 3,704,144.
Stearns, Eldon M., to General Electric Company. Turbine blade tip cooling air expander. 3,703,808, Cl. 60-39.660.
Stedman, James K.; and Cohen, Ronald, to United Aircraft Corporation. Dual mode fuel cell system. 3,704,172, Cl. 136-86.00c.
Steel Company of Canada, Limited, The: *See—*
Nagel, Horst; Thumm, Wilhelm; Garbe, Horst; Dailey, William H.; Goedeke, Egon; and Dadazynski, Rolf, 3,704,088.
Steele, Terri Giversen, to Western Electric Company, Incorporated. Primary explosive compositions for explosive bonding or forming. 3,704,186, Cl. 149-35.000.
Steger, Donald J., to Internationil Business Machines Corporation. Compact fluid actuator and method of making it. 3,703,853, Cl. 92-92.000.
Stehlik, Gerhard, to Osterreichische Studiengesellschaft fur Atomenergie G.m.b.H. Process for the sterilization of medicinal tissue-binding substances. 3,704,089, Cl. 21-54.00r.
Stein, Reinhardt P.; and Smith, Herchel, to American Home Products Corporation. 13-Polycarbonalkyl-16-methylgona-1,3,5(10)-trienes and 13-polycarbonalkyl-16-methylgon-4-en-3-ones and intermediates for their production. 3,704,253, Cl. 260-397.400.
Steinmiller, William George, to Fiber Industries, Inc. Finish for nylon or polyester rope. 3,704,160, Cl. 117-138.80f.
Stell, Thomas W.: *See—*
Lindsey, James M.; and Stell, Thomas W., 3,703,832.
Sterling Drug Inc.: *See—*
Clinton, Raymond O., 3,704,295.
Stewart-Warner Corporation: *See—*
Bardwell, Francis G.; Dobrauz, John W.; and Sobchak, Frank L., 3,704,373.
Ireland, Robert G.; Mas, Fred L.; and Teeguarden, Ross W., 3,703,925.
Stockel, Richard Frederick; and Herbes, William Frank, to American Cyanamid Company. Process for tris (hydroxymethy) phosphine by use of high boiling solvent. 3,704,325, Cl. 260-606.50p.
Stoddard, James Fred; Orabona, Francis A.; and Dorval, Rodolphe A., to Dynarad, Inc. Infrared scanning system. 3,704,342, Cl. 178-6.800.
Storage Technology Corporation: *See—*
Epina, August P.; and Pearson, Paul O., 3,703,997.
Strandtmann, Maximilian Von; Cohen, Marvin P.; and Shavel, John, Jr., to Warner-Lambert Company. Spiro pyrano [3,2-f] quinoline-3,1 pyrido [3,4,b] indole. 3,704,234, Cl. 260-288.000.
Strang, Aart, to Shell Oil Company. Dialklysalicylic acids and alkaline earth metal salts thereof. 3,704,315, Cl. 260-521.00r.
Strelow, Gert: *See—*
Bodig, Bernd; Sohner, Gerhard; and Strelow, Gert, 3,703,889.
Strobel, Albert F.; and Whitehouse, Maynard L., to GAF Corporation. 5-Methyl-2-(styrylphenyl)-4-triazolecarboxamide brighteners. 3,704,293, Cl. 260-240.00c.
Strobel, Rudolf G. K., to Procter & Gamble Company, The. Purification of coffee oil as a stable coffee aroma carrier. 3,704,132, Cl. 99-65.000.
Stroble, Carl P., to Allegheny Ludlum Industries, Inc. Cobalt vanadium iron alloy. 3,704,118, Cl. 75-170.000.
Sturgeon, Edward G., to Syncro Corporation. Brake controller. 3,704,042, Cl. 303-3.000.
Sugimoto, Hachiro: *See—*
Kohda, Akihide; Kohno, Shigeharu; Takahashi, Tohru; and Sugimoto, Hachiro, 3,704,244.
Sugimura, Yukio: *See—*
Kishida, Yukichi; Soma, Nobuo; Nakazawa, Junichi; Sato, Yoshio; Matsuda, Hidebumi; Terada, Atsusuke; Watanabe, Taiichiro; Sugimura, Yukio; Miyamura, Toshihide; Kaneko, Masanao; and Watatani, Mitsuo, 3,704,294.
Sugita, Sadao: *See—*
Koda, Ken'Ichi; Kikuchi, Shoji; Wada, Tsuneo; Kuwabara, Yoshimi; Horikoshi, Akira; Tanimura, Kensaku; and Sugita, Sadao, 3,704,128.
Suh, John T.: *See—*
Skorcz, Joseph A.; Suh, John T.; and Judd, Claude I., 3,704,299.
Suh, John T., to Colgate-Palmolive Company. Certain 2-amidino-1,2,3,4-tetrahyrobenzotheino [2,3-c]azepines. 3,704,237, Cl. 260-294.80b.
Sullivan, Paul G.; MacLeod, Kenneth H.; and Kempa, Joseph E., to Hanna Mining Company, The. Screening apparatus. 3,703,995, Cl. 241-69.000.
Sullivan, Robert E.: *See—*
Salmassy, Oscar E.; and Sullivan, Robert E., 3,704,363.
Sumitomo Chemical Co., Ltd.: *See—*
Enomoto, Sigeharu; Sato, Katsunobu; and Suzuki, Goichi, 3,704,302.
Sumitomo Electric Industries, Ltd.: *See—*
Oga, Toshisaburo; and Okazaki, Ken, 3,704,176.
Yoshikawa, Kengi; and Hayashi, Etsuo, 3,704,048.
Sun Oil Company of Pennsylvania, mesne: *See—*
Ware, Richard E.; and Merges, John C., Jr., 3,704,145.
Sundsten, Owe Wilhelm; and Johansson, Karl Bertil Sune, to Skandinavisk Foto Trade AB. Screwdriver with an exchangeable tip 3,703,916, Cl. 145-50.00r.
Suzuki, Goichi: *See—*
Enomoto, Sigeharu; Sato, Katsunobu; and Suzuki, Goichi, 3,704,302.
Swan, Donald M. Grass seed mat. 3,703,786, Cl. 47-56.000.
Swanson, Kenneth W.; Rolland, William C.; and Kraft, Michael J., to Pneumatic separator, filter and particle conveying. system. 3,703,957, Cl. 209-144.000.
Swanson, Kenneth W.; Rolland, William C.; and Kraft, Michael J. Pneumatic separator, filter and particle conveying system. 3,703,958, Cl. 209-144.000.
Swift & Company: *See—*
Shone, Robert L.; and Findley, Thomas W., 3,704,256.
Swift, Harry J.: *See—*
Wrestler, Frank; Swift, Harry J.; and Wrestler, Edgar R., 3,703,802.
Syncro Corporation: *See—*
Crouch, Thomas J.; and Gynn, George E., 3,704,397.
Sturgeon, Edward G., 3,704,042.
Synnestvedt, Don A., to Ajax Magnethermic Corporation. Support means for induction coil. 3,704,336, Cl. 13-27.000.
Szumachowski, Edwin R.: *See—*
Delong, William T.; Szumachowski, Edwin R.; and Heverly, Harold R., 3,704,149.
Takahashi, Tohru: *See—*
Kohda, Akihide; Kohno, Shigeharu; Takahashi, Tohru; and Sugimoto, Hachiro, 3,704,244.
Takai, Akira: *See—*
Kodama, Yutaka; Takai, Akira; and Inagaki, Tatsumi, 3,704,335.
Takeda Chemical Industries, Ltd.: *See—*
Noguchi, Shunsaku; and Kishimoto, Shoji, 3,704,241.
Takinami, Koichi: *See—*
Shiro, Teruo; Takinami, Koichi; Akutsu, Eiichi; Yoshii, Hiroe; and Yamada, Yasutsugu, 3,704,205.
Talbot, James R.: *See—*
Binford, Jack C.; Ethridge, Frederick A.; and Talbot, James R., 3,703,753.
Talley, William H., to United States of America, Air Force. Multi-purpose helmet assembly especially for use with a catheter. 3,703,891, Cl. 128-2.00r.
Tanaka, Yukio: *See—*
Umeda, Shinobu; Miyagawa, Yoshiaki; Tanaka, Yutaka; Tanaka, Yukio; and Nakamura, Ryoji, 3,703,818.
Tanaka, Yutaka: *See—*
Umeda, Shinobu; Miyagawa, Yoshiaki; Tanaka, Yutaka; Tanaka, Yukio; and Nakamura, Ryoji, 3,703,818.
Tanimura, Kensaku: *See—*
Koda, Ken'Ichi; Kikuchi, Shoji; Wada, Tsuneo; Kuwabara, Yoshimi; Horikoshi, Akira; Tanimura, Kensaku; and Sugita, Sadao, 3,704,128.
Tashiro, Hiroji; and Yamaguchi, Tutomu, to Toka Shikiso Chemical Industry Co., Ltd. Epoxy resin curing agent. 3,704,229, Cl. 252-182.000.
Tatsuta, Sumitaka; and Ueno, Wataru, to Fuji Photo Film Co., Ltd. Process for producing photographic materials. 3,704,154, Cl. 117-34.000.
Taylor, Robert S., to Hexcel Corporation. Corrosion inhibition using n-aminoalkyl phthalamides. 3,704,090, Cl. 21-2.700.
TDK Electronics Co., Ltd.: *See—*
Ueoka, Hisayoshi; Horii, Kazuo; Umeya, Kazumasa; and Maruyama, Syunsuke, 3,704,266.
Technicolor, Inc.: *See—*
Robak, Edward, 3,704,054.
Teeguarden, Ross W.: *See—*
Ireland, Robert G.; Mas, Fred L.; and Teeguarden, Ross W., 3,703,925.
Teikoku Hormone Mfg. Co., Ltd.: *See—*
Hara, Kazuo; Samoto, Mistunobu; Sawai, Masanobu; and Nakamura, Shiro, 3,704,168.
Tel-Tone Corporation: *See—*
McIntosh, Alexander Charles; and Smith, Maurice Irvin, 3,704,348.
Teledyne Ryan Aeronautical Company: *See—*
Girard, Peter F., 3,703,998.
Telefunken Patentyerwertungsgesellschaft m.b.H.: *See—*
Westphal, Klaus, 3,703,837.

- Teletype Corporation: *See*—
  - Halla, Richard C., 3,704,353.
  - McClelland, Walter B., 3,704,389.
- Tellier, Gilbert F., to United States of America, Air Force. Squirt cleaning poppet valve and seat. 3,703,908, Cl. 137-238.000.
- Tennerstedt, M. Richard: *See*—
  - Fiore, Jack C.; and Tennerstedt, M. Richard, 3,704,424.
- Tenney, William L. Multiple RPM range tuned exhaust pipe and silencer for two-cycle engine. 3,703,937, Cl. 181-36.00r.
- Teplitz, Alfred, to United States Steel Corporation. Balancing mechanism and method for continuous casting molds. 3,703,923, Cl. 164-260 000.
- Terada, Atsusuke: *See*—
  - Kishida, Yukichi; Soma, Nobuo; Nakazawa, Junichi; Sato, Yoshio; Matsuda, Hidebumi; Terada, Atsusuke; Watanabe, Taiichiro; Sugimura, Yukio; Miyamura, Toshihide; Kaneko, Masanao; and Watatani, Mitsuo, 3,704,294.
- Teradyne, Inc.: *See*—
  - Johnson, Lennart B., 3,704,394.
- Texaco Inc.: *See*—
  - Newman, Stanley R.; Von Allmen, Ronald W.; Dille, Kenneth L.; and Vermillion, Herbert E., 3,704,109.
  - Schlicht, Raymond C.; Eckert, George W.; and Von Allmen, Ronald W., 3,704,107.
- Texas Instruments, Incorporated: *See*—
  - Bawa, Mohendra S.; and Thur, Donald O., 3,704,104.
  - Kinstley, Warren O.; and Sivertsen, David R., 3,704,216.
  - Pearson, Samuel Reader, 3,704,451.
  - Ty, Henry; and Luerken, Joseph, 3,704,179.
- Textron Inc.: *See*—
  - Smith, George M., 3,703,981.
- Thibaudon, Dominique: *See*—
  - Paris, Rene A.; Thibaudon, Dominique; Roubin, Marc P.; and Paris, Jacques M., 3,704,116.
- Tholl, David M., to De Lavel Separator Company, The. Method and apparatus for centrifuging fluid mixtures and selectively removing liquid material therefrom. 3,703,983, Cl. 233-19.00a.
- Thomas, Georges: *See*—
  - Petit, Maurice; and Thomas, Georges, 3,704,140.
- Thomason, Roger B., to Arvin Industries, Inc. Frequency lock-in preset tuning system. 3,704,422, Cl. 325-422.000.
- Thumm, Wilhelm: *See*—
  - Nagel, Horst; Thumm, Wilhelm; Garbe, Horst; Dailey, William H.; Goedeke, Egon; and Dadazynski, Rolf, 3,704,088.
- Thur, Donald O.: *See*—
  - Bawa, Mohendra S.; and Thur, Donald O., 3,704,104.
- Tibbals, Edward Camp. Safety razor blade. 3,703,766, Cl. 30-346.530.
- Tickett, Edward F., 50% Reynolds, Alex B. Pipe fitting. 3,703,906, Cl. 137-15.000.
- Tilles, Harry; and Brokke, Mervin E., to Stauffer Chemical Company. 5-(Pyridyl) methyl thiocarbamates. 3,704,236, Cl. 260-293.690.
- Timken Company, The: *See*—
  - Weigel, Charles P., 3,704,183.
- Timken Roller Bearing Company, The: *See*—
  - Whisler, Howard E.; Shah, Bhupendra Umedchand; Jeskey, Gerald Vernon; and Bloom, Ray Albert, 3,703,924.
- Tinnerman, George A.: *See*—
  - Gracon, Andrew; and Tinnerman, George A., 3,703,794.
- Toka Shikiso Chemical Industry Co., Ltd.: *See*—
  - Tashiro, Hiroji; and Yamaguchi, Tutomu, 3,704,229.
- Toko Kabushiki Kaisha: *See*—
  - Maeda, Hisao; and Kobayashi, Keisuke, 3,704,457.
- Tomiyama, Eijiro, to Tomy Kogyo Co., Ltd. Track device for toy vehicle. 3,703,989, Cl. 238-10.00e.
- Tomy Kogyo Co., Ltd.: *See*—
  - Tomiyama, Eijiro, 3,703,989.
- Tonka Corporation: *See*—
  - Pfeilsticker, Lee J.; and Pauly, Ronald R., 3,703,785.
- Touchette, Jennie Lee: *See*—
  - Ketley, Arthur Donald; Kehr, Clifton Leroy; and Touchette, Jennie Lee, 3,704,125.
- Towmotor Corporation: *See*—
  - Shaffer, Walter M.; and Crawford, John T., 3,703,969.
- Townsend, Keith Gerald; and Harlow, David Arthur, to Bentley Engineering Company Limited, The. Circular knitting machines. 3,703,819, Cl. 66-93.000.
- Toy, Arthur D. F.; and Walsh, Edward N., to Stauffer Chemical Company. Flame retardant rayon composition and process. 3,704,144, Cl. 106-15.0fp.
- Toy, William W., 50% to Harmon, Lewis G. Rear view optical system. 3,704,062, Cl. 350-301.000.
- Toyama Chemical Co., Ltd.: *See*—
  - Kodama, Yutaka; Takai, Akira; and Inagaki, Tatsumi, 3,704,335.
- Toyo Boseki Kabushiki Kaisha: *See*—
  - Umeda, Shinobu; Miyagawa, Yoshiaki; Tanaka, Yutaka; Tanaka, Yukio; and Nakamura, Ryoji, 3,703,818.
- Toyomasu, Ryota: *See*—
  - Hanaoka, Takemi; Kakehashi, Toshiro; Toyomasu, Ryota; and Yata, Tomio, 3,704,316.
- Tracked Hovercraft Limited: *See*—
  - Randell, Richard, 3,703,869.
- Trane Company, The: *See*—
  - Welch, Donald C., 3,703,815.
- Travis, David Neil. Wavelength selective mirror systems. 3,704,061, Cl. 350-171.000.
- Travis, Lawrence R., to Electro Connective Systems, Inc. Printed circuitry. 3,704,164, Cl. 117-212.
- Trenary, Bryant: *See*—
  - Davis, Leo W.; Lackey, Marion D.; Ross, John Reuben; and Trenary, Bryant, 3,704,040.
- Tsai, Shan-Pu: *See*—
  - Foley, Edward F., Jr.; Tsai, Shan-Pu; and Zatorsky, William A., 3,704,156.
- Tsuji, Ryuta: *See*—
  - Horikiri, Toshihiko; and Tsuji, Ryuta, 3,703,911.
- Tsuruishi, Yuki, to Kabushiki Kaisha Suwa Seikasha. Pawl. 3,703,838, Cl. 74-575.000.
- Tubuko, Kazuo: *See*—
  - Yamaguchi, Nario; Shimizu, Sakae; and Tubuko, Kazuo, 3,704,122.
- Tubular Products, Inc.: *See*—
  - Young, James L., 3,704,017.
- Tucker, Martin: *See*—
  - Cushman, Walton W., 3,704,026.
- Turin, Michel J.: *See*—
  - Fauran, Claude P.; Turin, Michel J.; Raynaud, Guy M.; and Pourrias, Bernard M., 3,704,305.
- Turowski, Else Paula Maria: *See*—
  - Buffleb, Herbert; Franck, Heinz-Gerhard; Turowski, Johannes; Collin, Gerd; and Zander, Maximilian, 3,704,331.
- Turowski, Johannes: *See*—
  - Buffleb, Herbert; Franck, Heinz-Gerhard; Turowski, Johannes; Collin, Gerd; and Zander, Maximilian, 3,704,331.
- Tuttle, Floyd W.; and Tuttle, Ralph W. Disc tiller. 3,703,932, Cl. 172-288.000.
- Tuttle, Ralph W.: *See*—
  - Tuttle, Floyd W.; and Tuttle, Ralph W., 3,703,932.
- Twilley, Ian C.; Russell, William N.; and Peterson, Weldon H., to Allied Chemical Corporation. Polymerization apparatus. 3,704,100, Cl. 23-260.000.
- Ty, Henry; and Luerken, Joseph, to Texas Instruments, Incorporated. Process for improving thermo response characteristics of thermostat metal elements. 3,704,179, Cl. 148-6.170.
- Ueda, Akira. Water scooter. 3,703,877, Cl. 115-70.000.
- Ueda, Ikuo: *See*—
  - Umio, Suminori; Ueda, Ikuo; Sato, Yoshinari; and Maeno, Shizuo, 3,704,245.
- Ueno, Wataru: *See*—
  - Tatsuta, Sumitaka; and Ueno, Wataru, 3,704,154.
- Ueoka, Hisayoshi; Horii, Kazuo; Umeya, Kazumasa; and Maruyama, Syunsuke, to TDK Electronics Co., Ltd. Barium titanozirconate semiconducting ceramic compositions. 3,704,266, Cl. 252-520.000.
- Uhrich, Richard W.; and Held, Jimmy L., to United States of America, Navy. Linear linkage manipulator arm. 3,703,968, Cl. 214-147.00t.
- Ukebe, Teruo: *See*—
  - Saito, Tatsuo; Akahide, Kozo; and Ukebe, Teruo, 3,704,358.
- Ulseth, John W., to Minnesota Mining and Manufacturing Company. Cored roll arbor. 3,703,996, Cl. 242-68.000.
- Umeda, Noriko: *See*—
  - Coker, Cecil Harold; and Umeda, Noriko, 3,704,345.
- Umeda, Shinobu; Miyagawa, Yoshiaki; Tanaka, Yutaka; Tanaka, Yukio; and Nakamura, Ryoji, to Toyo Boseki Kabushiki Kaisha. Apparatus for feeding warps or tilling threads to knitting machine. 3,703,818, Cl. 66-84.000.
- Umeya, Kazumasa: *See*—
  - Ueoka, Hisayoshi; Horii, Kazuo; Umeya, Kazumasa; and Maruyama, Syunsuke, 3,704,266.
- Umio, Suminori; Ueda, Ikuo; Sato, Yoshinari; and Maeno, Shizuo. Tricyclic enol ether compounds. 3,704,245, Cl. 260-327.00b.
- Union Carbide Corporation: *See*—
  - Arney, William C., Jr., 3,704,273.
  - Jackson, George E., 3,703,820.
  - Johnson, Robert Norman, 3,704,287.
  - McClincy, Richard Joseph; Downing, James Herbert; and Wilson, Benjamin Jrhn, 3,704,094.
  - Wynstra, John; and Gibb, Thomas B., Jr., 3,704,268.
- Union Carbide Crrporation: *See*—
  - Wilson, Benjamin John; McClincy, Richard J.; and Downing, James Herbert, 3,704,114.
- Union Oil Company of California: *See*—
  - Rardin, Robert W., 3,703,929.
- United Aircraft Corporation: *See*—
  - Kuehl, Donald K.; Blackman, Arthur W.; and Glassman, Irvin, 3,704,184.
  - Stedman, James K.; and Cohen, Ronald, 3,704,172.
- United Kingdom Atomic Energy Authority: *See*—
  - Cairns, James Anthony; and Desborough, Colin Leonard, 3,704,371.
  - Hardy, Clarence James; and Holdoway, Michael Joseph, 3,704,147.
- United States Borax & Chemical Corporation: *See*—
  - Dulat, Joseph, 3,704,146.
- United States of America
  - Agriculture: *See*—
    - Mod, Robert R.; Magne, Frank C.; and Skau, Evald L., 3,704,257.
  - Air Force: *See*—
    - Barry, James D.; and Boney, William E., III., 3,704,428.
    - Bleikamp, Roy H., Jr., 3,703,844.
    - Brown, John P., 3,703,942.

    - Coyer, Robert D.; and Weigel, Robert M., 3,704,466.
    - Drane, Charles J., Jr.; and McIlvenna, John F., Jr., 3,704,464.
    - Farmer, William M., 3,704,053.
    - Ruf, Franz X.; Chase, Wayne R.; and Prell, Raymond A., 3,703,881.
    - Semenza, Eugene, 3,703,866.
    - Shelton, William L., 3,704,370.
    - Talley, William H., 3,703,891.
    - Tellier, Gilbert F., 3,703,908.
    - Walton, Roger H., 3,703,870.
  - Navy: *See*—
    - Galloway, Dwight V.; King, Gordon E.; Asbelle, Charles C.; and Arrigo, Michael F., 3,703,894.
    - Gilbertson, Warren L.; Shelton, Everett T., Jr.; and Southall, Hobert M., 3,703,865.
    - Lemieux, Thomas H., 3,703,874.
    - Roeschlein, Eugene R.; Weiss, Donald C.; and Zeph, David L., 3,704,364.
    - Rosenberg, Edgar N., 3,704,443.
    - Uhrich, Richard W.; and Held, Jimmy L., 3,703,968.
    - Villard, Oswald G., Jr., 3,704,420.
  - Navy, mesne: *See*—
    - Barry, George H., 3,704,463.
- United States Steel Corporation: *See*—
  - Ashworth, Robert H., 3,704,220.
  - Douty, Donald L., 3,703,979.
  - Teplitz, Alfred, 3,703,923.
- Upjohn Company, The: *See*—
  - Magerlein, Barney J., 3,704,289.
- U.S. Philips Corporation: *See*—
  - Beale, Julian Robert Anthony, 3,704,177.
  - Glaise, Rene, 3,704,399.
  - Hughes, John Barry, 3,704,456.
- U.S. Philips Corporation, mesne: *See*—
  - Limbough, Pol Jean, 3,704,163.
- Uskokovic, Milan Radoje, to Hoffmann-La Roche Inc. Processes for the preparation of desa-androstanes, pregnanes, and unsaturated derivatives thereof. 3,704,324, Cl. 260-586.
- Valdo, Alex R.; and Sanderford, Freeman M., to Ethyl Crrporation. Process for decomposing intermetallic compounds in metals. 3,704,117, Cl. 75-.50c.
- Valdo, Alex R.; and Janes, Jerry M., to Ethyl Corporation. Method of strain-hardening foamed metal. 3,704,193, Cl. 156-196.000.
- Van Der Loos, Jozef L. M.; and Claassen, Peter J.M.W. Anionic catalytic polymerization of lactams in the presence of an organic isocyanate and a polyether. 3,704,280, Cl. 260-77.5am.
- Van Winsen, Friedrick H.; and Daur, Hans-Karl, to Daimler-Benz Aktiengesellschaft. Method of assembling elastic coupling. 3,703,761, Cl. 29-436.000.
- Vancil, Donald Otis: *See*—
  - Harrison, Maurice Clark; and Vancil, Donald Otis, 3,704,092.
- Varga, Richard S., to Goodrich, B. F., Company, The. Method of making a jack. 3,704,189, Cl. 156-69.000.
- Vastag, Joseph: *See*—
  - Wright, Roy E.; and Vastag, Joseph, 3,704,148.
- Veba-Chemie Aktiengesellschaft: *See*—
  - Rindtorff, Ermbrecht; and Ester, Wilhelm, 3,704,329.
- Velinde, Auguste, to Verlinde S.A. Variable-throw crankpin crankshaft. 3,703,839, Cl. 74-600.000.
- Vereinigte Flugtechnische Werke-Fokker GmbH: *See*—
  - Renner, Eskhard; and Linnenbecker, Udo, 3,703,849.
- Verlinde S.A.: *See*—
  - Velinde, Auguste, 3,703,839.
- Vermillion, Herbert E.: *See*—
  - Newman, Stanley R.; Von Allmen, Ronald W.; Dille, Kenneth L.; and Vermillion, Herbert E., 3,704,109.
- Verses, Christ J.; and Karlson, Eskil L., to Pollution Control Industries, Inc. Sterilizing package and method and means for sterilizing an article and thereafter checking its sterility. 3,704,096, Cl. 23-230.00r.
- Victor Company of Japan, Limited: *See*—
  - Fujita, Mitsuo, 3,704,341.
- Villard, Oswald G., Jr., to United States of America, Navy. Automatic frequency control for suppressed carrier receivers. 3,704,420, Cl. 325-329.000.
- Vitchus, Bernard C.: *See*—
  - Vrbaski, Theodor; Vitchus, Bernard C.; and Koncos, Robert, 3,704,251.
- Voemel, Wolfgang: *See*—
  - Berger, Herbert; Gall, Rudi; Merdes, Hartmut; Stach, Kurt; Voemel, Wolfgang; and Sauer, Winfriede, 3,704,301.
- Voland, Elmo W.: *See*—
  - Linn, Wallace L.; and Voland, Elmo W., 3,704,351.
- Vollmann, Heinrich: *See*—
  - Bien, Hans-Samuel; Hohmann, Walter; Vollmann, Heinrich; and Heinrich, Leister, 3,704,252.
- Von Allmen, Ronald W.: *See*—
  - Newman, Stanley R.; Von Allmen, Ronald W.; Dille, Kenneth L.; and Vermillion, Herbert E., 3,704,109.
  - Schlicht, Raymond C.; Eckert, George W.; and Von Allmen, Ronald W., 3,704,107.
- Von Duprin, Inc.: *See*—
  - Foster, John R.; and Hunt, Larry R., 3,703,741.
- Vrbaski, Theodor; Vitchus, Bernard C.; and Koncos, Robert, to Sinclair Oil Corporation. Production of phenyl-maleic-anhydride by catalytic vapor phase oxidation of biphenyl or sec-butyl benzene. 3,704,251, Cl. 260-346.800.
- Wada, Tsuneo: *See*—
  - Koda, Ken'Ichi; Kikuchi, Shoji; Wada, Tsuneo; Kuwabara, Yoshimi; Horikoshi, Akira; Tanimura, Kensaku; and Sugita, Sadao, 3,704,128.
- Wagner, William Sherwood: *See*—
  - Soehngen, John William; Wagner, William Sherwood; Jamison, Saunders Eliot; and Canfield, Dale Kelley, 3,704,192.
- Walker, Bobby T.; and Danna, Vincent F. Fishing device. 3,703,781, Cl. 43-16.000.
- Walsh, Edward G., to Bell Telephone Laboratories, Incorporated. Fluidically controlled antiskid vehicle brake system. 3,704,045, Cl. 303-21.00f.
- Walsh, Edward N.: *See*—
  - Toy, Arthur D. F.; and Walsh, Edward N., 3,704,144.
- Walter, Vincent J. Running lights and differential parking systems for vehicles. 3,704,446, Cl. 340-74.000.
- Walther, Terry R.: *See*—
  - Mc Coy, Michael R.; and Walther, Terry R., 3,704,454.
- Walton, Richard Wiegmann: *See*—
  - La Via, Anthony Laurence; O'Laughlin, Richard Lawrence; and Walton, Richard Wiegmann, 3,704,138.
- Walton, Roger H., to United States of America, Air Force. Coupler-cargo pallet/container. 3,703,870, Cl. 105-366.00r.
- Waly, Adnan, to Personal Communications, Inc. Micro-image recording and read-out system. 3,704,068, Cl. 355-46.000.
- Wampler, David M., to Libbey-Owens-Ford Company. Spray coating apparatus. 3,703,880, Cl. 118-2.000.
- Ware, Richard E.; and Merges, John C., Jr., to Sun Oil Company of Pennsylvania, mesne. Investment casting wax. 3,704,145, Cl. 106-38.700.
- Warner-Lambert Company: *See*—
  - Strandtmann, Maximilian Von; Cohen, Marvin P.; and Shavel, John, Jr., 3,704,234.
  - Zinnes, Harold; Schwartz, Martin L.; and Shavel, John, Jr., 3,704,298.
- Wasaburo, Ohta; and Nobouri, Murayama, to Ricoh Co., Ltd. Electronic graphic recording system. 3,704,468, Cl. 346-74.0cr.
- Washecheck, Paul H.; and Starks, Charles M., to Continental Oil Company. Production of carboxylic acids. 3,704,319, Cl. 260-540.000.
- Wastenson, Erik Goran; and Bockstiegel, Georg Heinrich Artur Gerhard, to Hoganas AB. High alloy steel powders and their consolidation into homogeneous tool steel. 3,704,115, Cl. 75-.5bc.
- Watanabe, Taiichiro: *See*—
  - Kishida, Yukichi; Soma, Nobuo; Nakazawa, Junichi; Sato, Yoshio; Matsuda, Hidebumi; Terada, Atsusuke; Watanabe, Taiichiro; Sugimura, Yukio; Miyamura, Toshihide, Kaneko, Masanao; and Watatani, Mitsuo, 3,704,294.
- Watarai, Syu: *See*—
  - Honjo, Satoru; Watarai, Syu; and Ono, Hisatake, 3,704,119.
- Watatani, Mitsuo: *See*—
  - Kishida, Yukichi; Soma, Nobuo; Nakazawa, Junichi; Sato, Yoshio; Matsuda, Hidebumi; Terada, Atsusuke; Watanabe, Taiichiro; Sugimura, Yukio; Miyamura, Toshihide; Kaneko, Masanao; and Watatani, Mitsuo, 3,704,294.
- Watatani, Takako: *See*—
  - Kishida, Yukichi; Soma, Nobuo; Nakazawa, Junichi; Sato, Yoshio; Matsuda, Hidebumi; Terada, Atsusuke; Watanabe, Taiichiro; Sugimura, Yukio; Miyamura, Toshihide; Kaneko, Masanao; and Watatani, Mitsuo, 3,704,294.
- Wayson, Andrew J.; and O'Connell, John T., to Merriman, Inc. Continuous method of forming two-part travelers. 3,703,759, Cl. 29-417.000.
- Weathers, Robert E. Thermo cold-pak container. 3,703,816, Cl. 62-457.000.
- Weber, Abraham; and Frossard, Jacques J., to Mead Johnson & Company. Octalone carboxylic acid anhydrides. 3,704,250, Cl. 260-346.350.
- Weber, Helmut: *See*—
  - Pfeuffer, Alfred; Kalkhof, Gustav; and Weber, Helmut, 3,704,012
- Weber Marking Systems, Inc.: *See*—
  - Anderson, Bror E.; and Schick, Margery L., 3,704,155.
- Wei, Peter H. L.; and Bell, Stanley C., to American Home Products Corporation. Certain thiazole [3,2-a] benzimidazole compound. 3,704,239, Cl. 260-306.700.
- Wei, Peter H. L.; and McCaully, Ronald J., to American Home Products Corporation. 3-Substituted-4-hydroxy-2-substituted imino-4-phenyl-5-thiazolidine alkyl carboxylic acids and their alkyl esters. 3,704,240, Cl. 260-306.700.
- Wei, Peter H. L., to American Home Products Corporation. 6,7,8,9-Tetra hydropyrimido (2,1-b)-benz othiozole-6-carboxylic acid, alkyl esters. 3,704,303, Cl. 260-250.50r.
- Wei, Peter H. L.; and Bell, Stanley C., to American Home Products Corporation. 5 (7)-Acetamid 0-3-(substituted phenyl)-2,3-dihydro-3-hydroxy-7 alpha) pyrimidine-2-alkanoic acid, alkyl esters. 3,704,304, Cl. 260-250.50r.
- Weigel, Charles P., to Timken Company, The. Method of forming a bearing by melting, working and heat treatment. 3,704,183, Cl. 148-126.000.
- Weigel, Robert M.: *See*—
  - Coyer, Robert D.; and Weigel, Robert M., 3,704,466.
- Weigel, Virginia: *See*—
  - Coyer, Robert D.; and Weigel, Robert M., 3,704,466.

- Weiss, Donald C.: *See—*
  - Roeschlein, Eugene R.; Weiss, Donald C.; and Zeph, David L., 3,704,364.
- Welch, Donald C., to Trane Company, The. Double fin cooling coil with condensate director. 3,703,815, Cl. 62-290.000.
- Welter, Clarence J., to Diamond Laboratories, Inc. Transmissible gastroenteritis vaccines and methods of producing the same. 3,704,203, Cl. 195-1.300.
- Wemmers, Anton: *See—*
  - De Boer, Henri G. J.; Brooshooft, Thomas; and Wemmers, Anton, 3,704,129.
- Wenckus, Joseph F.: *See—*
  - Haggerty, John S.; and Wenckus, Joseph F., 3,704,093.
- Werst, Gerhard: *See—*
  - Hartmann, Hans Joerg; Schnell, Georg; Werst, Gerhard; Grosselfinger, Horst; Hartmann, Job-Werner; and Bipp, Hansjoerg, 3,704,152.
- Wertz, William H.: *See—*
  - Smith, Lloyd M.; Scott, James B.; and Wertz, William H., 3,704,346.
- Westerman, George Raymond, to Bell Telephone Laboratories, Incorporated. Starting circuit for low voltage inverters utilizing regenerative action in the feedback transformer of the inverter to generated starting signals. 3,704,430, Cl. 331-113.00a.
- Western Electric Company, Incorporated: *See—*
  - Steele, Terri Giversen, 3,704,186.
- Western Geophysical Company of America: *See—*
  - Schmitt, Arthur N., 3,704,444.
- Westphal, Klaus, to Telefunken Patentyerwertungsgesellschaft m.b.H. Article for use in sound recording and reproducing instruments. 3,703,837, Cl. 74-519.000.
- Weyerhaeuser Company: *See—*
  - Freeman, Harlan G.; and Gillern, Maurice F., 3,704,269.
- Whisler, Howard E.; Shah, Bhupendra Umedchand; Jeskey, Gerald Vernon; and Bloom, Ray Albert, to Timken Roller Bearing Company, The. Apparatus for introducing molten metal into a strand casting mold. 3,703,924, Cl. 164-337.000.
- Whitehouse, Maynard L.: *See—*
  - Strobel, Albert F.; and Whitehouse, Maynard L., 3,704,293.
- Wiberg, Edwin E. Heating apparatus. 3,703,895, Cl. 126-85.00b.
- Wigal, Voorhis F. Multiple jumping device. 3,703,784, Cl. 46-129.000.
- Wikel, David C.; and Smith, Rymer H., to Wikel Manufacturing Co., Inc. Seal coating machine. 3,703,856, Cl. 94-44.000.
- Wikel Manufacturing Co., Inc.: *See—*
  - Wikel, David C.; and Smith, Rymer H., 3,703,856.
- Wilczewski, Robert H.: *See—*
  - Mack, Ronald H.; Wilczewski, Robert H.; and Kondur, Nicholas, Jr., 3,703,948.
- Wilkinson, Peter R. S. Apparatus for photographic processing. 3,703,860, Cl. 95-93.000.
- Willems, Jozef Frans: *See—*
  - Pollet, Robert Joseph; Philippaerts, Herman Adelbert; Willems, Jozef Frans; and Claes, Frans Henri, 3,704,130.
- Williams, Thomas B.: *See—*
  - Norman, Vello; Williams, Thomas B.; Kallianos, Andrew G.; and Mold, James D., 3,703,901.
- Williamson, William A., to Clark Equipment Company. Control system for lift trucks. 3,703,806, Cl. 60-19.000.
- Wilson, Benjamin John; McClincy, Richard J.; and Downing, James Herbert, to Union Carbide Crrporation. Process and furnace charge for use in the production of ferrosilicon alloys. 3,704,114, Cl. 75-3.000.
- Wilson, Benjamin Jrhn: *See—*
  - McClincy, Richard Joseph; Downing, James Herbert; and Wilson, Benjamin Jrhn, 3,704,094.
- Wilson, Calvin L., to Reynolds Metals Company. Cooking pan having article-supporting wall above bottom wall. 3,704,142, Cl. 99-446.000.
- Wilson, Donald C., to FMC Corporation. Cooking and freezing products in flexible containers. 3,704,139, Cl. 99-192.00r.
- Wilson, Geoffrey, to B. & S. Massey Limited. Upsetting or forging machines. 3,703,823, Cl. 72-406.000.
- Windmoller & Holscher: *See—*
  - Brockmuller, Friedrich Franz, 3,703,951.
- Witsch, Heinz-Guenter: *See—*
  - Bayew, Dimiter; Daeuble, Manfred; Kaufmann, Otto; Ludsteck, Dieter; Pfitzner, Helmut; and Witsch, Heinz-Guenter, 3,704,086.
- Wittemer, William C. Safety closure. 3,703,975, Cl. 215-9.000.
- Witzky, Julius E. Pumpless stratified charge gas engine. 3,703,886, Cl. 123-32.0st.
- Wolcott, Edward O.: *See—*
  - McClelland, Donald H.; Pankow, Herbert G.; and Wolcott, Edward O., 3,704,173.
- Wolf, Milton; Diebold, James L.; and Bell, Stanley C., to American Home Products Corporation. Penicillins derived from the reaction of enamines with 6-isocyanato penicillanic acid. 3,704,291, Cl. 260-239.100.
- Wolf-Dieter Klink: *See—*
  - Fiala, Ernst, 3,704,032.
- Wolfe, Louis H.: *See—*
  - Spangler, Carl D., Jr.; Radd, Frederick J.; and Wolfe, Louis H., 3,704,333.
- Wolfe, Milton; Diebold, James L.; Russell, Peter B.; and Bell, Stanley C., to American Home Products Corporation. Semicarbazidopenicillins. 3,704,292, Cl. 260-239.100.
- Wolters, Ernst: *See—*
  - Burg, Karlheinz; Wolters, Ernst; Cherdron, Harald; and Leugering, Hans-Joachim, 3,704,275.
- Woltersdorf, Otto W., Jr.: *See—*
  - Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., 3,704,314.
- Womack, William Randol. View and cutter apparatus. 3,704,067, Cl. 355-29.000.
- Woodruff, Edward T.; and Andersen, Viggo S., to Grace, W. R., & Co. Drying of sugar solutions. 3,704,169, Cl. 127-62.000.
- Worthington Corporation: *See—*
  - Smith, Wilbur C., 3,703,811.
- Wrestler, Edgar R.: *See—*
  - Wrestler, Frank; Swift, Harry J.; and Wrestler, Edgar R., 3,703,802.
- Wrestler, Frank; Swift, Harry J.; and Wrestler, Edgar R. Combine apparatus. 3,703,802, Cl. 56-13.300.
- Wright, Charles P., to Boeing Company, The. Height sensor for hydrofoil watercraft. 3,704,442, Cl. 340-1.00l.
- Wright, Roy E.; and Vastag, Joseph. Adhesive for water-resistant corrugated paperboard bonds. 3,704,148, Cl. 106-79.000.
- wSanders Associates, Inc.: *See—*
  - Johnson, Philip M.; Dudevoir, Wilfried G.; and Northrup, Richard M., 3,704,070.
- Wynn, Michael J., to General Electric Company. Purification of dimethylhydrogenchlorosilane. 3,704,260, Cl. 260-448.20e.
- Wynstra, John; and Gibb, Thomas B., Jr., to Union Carbide Corporation. Curable, solid polymers based on cycloaliphatic polyepoxides and a method for the preparation thereof. 3,704,268, Cl. 260-2.0ep.
- Wysocki, Joseph J.; Adams, James E.; and Madrid, Robert W., to Xerox Corporation. Imaging system. 3,704,056, Cl. 350-150.000.
- Xerox Corporation: *See—*
  - Wysocki, Joseph J.; Adams, James E.; and Madrid, Robert W., 3,704,056.
  - Young, Eugene F., 3,704,066.
- Xomox Corporation: *See—*
  - Smith, Russell G., 3,703,910.
- Yamada, Yasutsugu: *See—*
  - Shiro, Teruo; Takinami, Koichi; Akutsu, Eiichi; Yoshii, Hiroe; and Yamada, Yasutsugu, 3,704,205.
- Yamada, Yoshihiko: *See—*
  - Makino, Katsuo; Yamada, Yoshihiko; and Onozaki, Jun, 3,704,121.
- Yamaguchi, Nario; Shimizu, Sakae; and Tubuko, Kazuo, to Kabushiki Kaisha Ricoh. Electrophotographic plate comprising a photoconductor dispersed in a resin binder. 3,704,122, Cl. 96-1.800.
- Yamaguchi, Tutomu: *See—*
  - Tashiro, Hiroji; and Yamaguchi, Tutomu, 3,704,229.
- Yamaguchi, Yasuju; and Nakayama, Yujiro, to Mitsubishi Petrochemical Company Limited. Production of wood-plastics composite structures. 3,704,161, Cl. 117-148.000.
- Yamaha, Mashio: *See—*
  - Eguchi, Fusatoshi; Okamoto, Sohei; Yamaha, Mashio; Matsumoto, Nobuo; and Yokoyama, Minoru, 3,703,963.
- Yamamoto, Nobuo; and Kawaguchi, Hideo, to Fuji Photo Film Co., Ltd. Process for manufacturing photographic film having a magnetic recording stripe. 3,704,167, Cl. 117-239.000.
- Yamanaka, Takashi; Miyauchi, Rinichi; Fujita, Hisaya; and Kaieda, Nobuo, to Yokogawa Electric Works, Ltd. Automatic balancing measuring meter. 3,704,415, Cl. 324-99.00r.
- Yamashita, Takashi; Chida, Yugo; Ninagawa, Sadayoshi; and Kato, Tetsuya, to Ajinomoto Co., Inc. Production of acetic acid. 3,704,317, Cl. 260-533.00r.
- Yanaga, Makoto, to Alps Electric Co., Ltd. Device for fixing a switch unit in a keyboard switch. 3,704,356, Cl. 200-168.00c.
- Yarber, Gordon W. Pressure regulating valve with flow control. 3,704,047, Cl. 303-54.000.
- Yarlott, John M.; and Gray, John C. Pneumatic press. 3,703,842, Cl. 83-524.000.
- Yata, Tomio: *See—*
  - Hanaoka, Takemi; Kakehashi, Toshiro; Toyomasu, Ryota; and Yata, Tomio, 3,704,316.
- Yokogawa Electric Works, Ltd.: *See—*
  - Yamanaka, Takashi; Miyauchi, Rinichi; Fujita, Hisaya; and Kaieda, Nobuo, 3,704,415.
- Yokoyama, Minoru: *See—*
  - Eguchi, Fusatoshi; Okamoto, Sohei; Yamaha, Mashio; Matsumoto, Nobuo; and Yokoyama, Minoru, 3,703,963.
- Yoshii, Hiroe: *See—*
  - Shiro, Teruo; Takinami, Koichi; Akutsu, Eiichi; Yoshii, Hiroe; and Yamada, Yasutsugu, 3,704,205.
- Yoshikawa, Kengi; and Hayashi, Etsuo, to Sumitomo Electric Industries, Ltd. and Goshi Kaisha Yoshikawa Seimitsu Kohsakusho. Metal bearing insert. 3,704,048, Cl. 308-72.000.
- Young, Edward G.; and Heggem, Howard W., to Beatrice Foods Co. Multiple layer surface working pads. 3,703,739, Cl. 15-230.170.
- Young, Eugene F., to Xerox Corporation. Reflex exposure medium. 3,704,066, Cl. 355-11.000.
- Young, James L., to Tubular Products, Inc. Safety device for backstop assembly. 3,704,017, Cl. 273-1.50r.
- Young, Walter A. Seed planter-failure detector. 3,704,459, Cl. 340-271.000.

- Zackheim, Eli A., to Silver, Jules. Teat dilator. 3,703,898, Cl. 128-261.000.
- Zakharov, Sergei Alexandrovich: *See—*
  - Kusovsky, Boris Isaakovich; Pavlov, Nikolai Ivanovich; Matiichenko, Anatoly Petrovich; Zakharov, Sergei Alexandrovich; and Birjukov, Dmitry Anatolievich, 3,704,222.
- Zander, Maximilian: *See—*
  - Buffleb, Herbert; Franck, Heinz-Gerhard; Turowski, Johannes; Collin, Gerd; and Zander, Maximilian, 3,704,331.
- Zatorsky, William A.: *See—*
  - Foley, Edward F., Jr.; Tsai, Shan-Pu; and Zatorsky, William A., 3,704,156.
- Zecher, Wilfried; Kuhle, Engelbert; and Holtschmidt, Hans, to Farbenfabriken Bayer Aktiengesellschaft. Process for the preparation of 3-chloro-4-methoxy-phenylisocyanate. 3,704,307, Cl. 260-453.00p.
- Zeidler, Johannes, to Gutmann, Alfred, Gesellschaft fur Maschinenbau. Chamber for treating work pieces by blast. 3,703,789, Cl. 51-9.000.
- Zeph, David L.: *See—*
  - Roeschlein, Eugene R.; Weiss, Donald C.; and Zeph, David L., 3,704,364.
- Ziegler, Charles Thomas. Vacuum producing means and method. 3,704,008, Cl. 261-25.000.
- Zinnes, Harold; Schwartz, Martin L.; and Shavel, John, Jr., to Warner-Lambert Company. 4-Acyloxy-3-(3-isoxazolocarbamyl)-2h-1,2-benzothiazine 1,1-dioxides. 3,704,298, Cl. 260-243.00r.
- Zitzler, Earl W.; and Ideboen, John, to Colonial Carbon Company. Apparatus for the continuous in-line production of multi-layered product units. 3,704,195, Cl. 156-250.000.
- Zoecon Corporation: *See—*
  - Henrick, Clive A.; and Siddall, John B., 3,704,258.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF NOVEMBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Daugherty, Arthur J., to Film Corp. of America. Photographic printing apparatus for making plural assorted-sized prints simultaneously. Re. 27,527, 11–28–72, Cl. 355—46.
Deere and Co.: *See—*
  Sanderson, Leon F., McCunn, and Hook. Re. 27,525.
Du Pont de Nemours, E. I., and Co.: *See—*
  Nadeau, Richard G. Re. 27,524.
Emerson Electric Co.: *See—*
  Schenk, John A., and Tilney. Re. 27,522.
FMC Corp.: *See—*
  Looker, Olin L., and Greedy. Re. 27,528.
  Maccherone, Lawrence. Re. 27,523.
Film Corp of America: *See—*
  Daugherty, Arthur J. Re. 27,527.
Greedy, Edwin F.: *See—*
  Looker, Olin L., and Greedy. Re. 27,528.
Hook, Richard W.: *See—*
  Sanderson, Leon F., McCunn, and Hook. Re. 27,525.
Looker, Olin L., and E. F. Greedy, by FMC Corp. Method of and apparatus for harvesting vine crops. Re. 27,528, 11–28–72, Cl. 171—1.
Maccherone, Lawrence, to FMC Corp. Machine for automatically placing bags on a wicket. Re. 27,523, 11–28–72, Cl. 214—8.
McCunn, Myron L.: *See—*
  Sanderson, Leon F., McCunn, and Hook. Re. 27,525.
N.V. Ingenieursbureau Voor Systemen en Octroolen "Spanstaal": *See—*
  Van der Veen, Romke. Re. 27,526.
Nadeau, Richard G., to E. I. du Pont de Nemours and Co. Enzymatic determination of nitrogen-containing compounds and enzymes reactive therewith. Re. 27,524, 11–28–72, Cl. 195—103.5.
Sanderson, Leon F., M. L. McCunn, and R. W. Hook, to Deere and Company. Cotton harvester. Re. 27,525, 11–28–72, Cl. 56—30.
Schenk, John A., and R. B. Tilney, to Emerson Electric Co. System for maintaining pressure in refrigeration systems. Re. 27,522, 11–28–72, Cl. 62—196.
Tilney, Ralph B.: *See—*
  Schenk, John A., and Tilney. Re. 27,522.
Van der Veen, Romke, to N.V. Ingenieursbureau Voor Systemen en Octroolen "Spanstaal". Method and device for determining the convey concentration of dredging spoil of a suspension of dredging spoil and water. Re. 27,526, 11–28–72, Cl. 73—61.

LIST OF DESIGN PATENTEES

AMP Inc.: *See—*
  Raynor, Terence R., and Smith. 225,209.
Aderman, Wayne L., and C. B. Kneale, to International Business Machines Corp. Document reader. 225,234, 11–28–72, Cl. D26—5.
Affiliated Hospital Products, Inc.: *See—*
  Einstein, Alfred C., Wolff, and Moran. 225,240.
Ahlstrom, Tom E. T., and H. O. G. Ehrich. Chair. 225,198, 11–28–72, Cl. D6—78.
Akola, Henry S. Bookcase. 225,201, 11–28–72, Cl. D6—186.
American Can Co.: *See—*
  Cousins, Michael A. 225,266.
American Seating Co.: *See—*
  Barecki, Chester J. 225,193.
Ametek, Inc.: *See—*
  Waite, Ralph D. 225,268.
Arnold, Floyd L., J. Brude, P. A. Celli, and J. R. Patmore, to Electronic Associates, Inc. Teaching machine. 225,232, 11–28–72, Cl. D25—1.
Ashton, Harold P., and J. B. Swett, to Dart Industries Inc. Grater. 225,286, 11–28–72, Cl. D89—1.
Axelrod, Barry, to Laurel Line Products. Clothes display rack. 225,283, 11–28–72, Cl. D80—8.
Bacevius, Joseph G., to Paul G. Garrity. Flashlight. 225,263, 11–28–72, Cl. D48—24.
Baker, Noel J., to Witton-James Ltd. Adhesive tab for rolls of sheet material. 225,278, 11–28–72, Cl. D59—2.
Barecki, Chester J., to American Seating Co. Airplane seat. 225,193, 11–28–72, Cl. D6—48.
Bressickello, Tony J. Refrigerated show case. 225,200, 11–28–225,202, 11–28–72, Cl. D8—8.
Becker, Kurt, to Hermann Heye. Bottle. 225,210, 11–28–72, Cl. D9—99.
Benjamin, E. Burton, to Welsh-Co. Infant's training chair. 225,224, 11–28–72, Cl. D23—53.
Benshoof, Robert E., to CBF Systems, Inc. Mobile fire detection and suppression unit. 225,220, 11–28–72, Cl. D14—3.
Berger, Joachim. Game board. 225,245, 11–28–72, Cl. D34—5.
Bixler, Kenneth D.: *See—*
  Reifers, Richard F., and Bixler. 225,213.
  Reifers, Richard F., and Bixler. 225,214.
Braun Aktiengesellschaft: *See—*
  Rams, Dieter. 225,264.
Bressickello, Tony J. Refrigerated show case. 225,220, 11–28–72, Cl. D6—172.
Brewer, William R., to Hamilton C. de Jong, d.b.a. Safety Brothers. Support leg for elevated toilet seat. 225,226, 11–28–72, Cl. D23—71.
Brude, John: *See—*
  Arnold, Floyd L., Brude, Celli, and Patmore. 225,232.
Brunswick Corp., The: *See—*
  Reineman, Richard G., and Schaefer. 225,244.
Burke, Jacob B. Pointer for a game board or similar article. 225,246, 11–28–72, Cl. D34—5.
Bur Kin Homes Corp.: *See—*
  King, Roger A., and Burton. 225,216.
Burton, Keith O.: *See—*
  King, Roger A., and Burton. 225,216.
CBF Systems, Inc.: *See—*
  Benshoof, Robert E. 225,220.
Cadillac Wire Corp.: *See—*
  Russo, Andelfo J. 225,191.
Cameron Athletic Corp.: *See—*
  Davis, Otho. 225,189.
Celli, Philip A.: *See—*
  Arnold, Floyd L., Brude, Celli, and Patmore. 225,232.
Chase, Ascher, to General Foam Plastics Corp. Swimming pool. 225,243, 11–28–72, Cl. D34—5.
Chernow, Michael, and F. E. Yarkoni, to Monocraft, Inc. Display stand. 225,192, 11–28–72, Cl. D6—28.
Chicago Musical Instrument Co.: *See—*
  Owens, Buck. 225,275.
Conner, James M., to Polaroid Corp. Front panel for camera or similar article. 225,280, 11–28–72, Cl. D61—1.
Construction Specialties, Inc.: *See—*
  Zampetti, Patrick, and Deuchler. 225,269.
Continental Hair Products, Inc.: *See—*
  Rizzuto, Leandro P., and Schrager. 225,284.
Cook, William J., to General Electric Co. Portable electric heater. 225,229, 11–28–72, Cl. D23—123.
Court, Jules A., to TC Products. Portable combined heater and lamp. 225,227, 11–28–72, Cl. D23—77.
Cousins, Michael A., to American Can Co. Cup dispenser. 225,266, 11–28–72, Cl. D52—2.
Craig, Mordecai R.: *See—*
  Sackler, Mortimer D., and Craig. 225,211.
Creative Creations, Inc.: *See—*
  Feuer, Perry. 225,258.
Culbertson, Richard, to General Electric Co. Musical instrument. 225,276, 11–28–72, Cl. D56—2.
Dallaire, Dominique and R. M., to P.H. Plastics Inc. Extruded plastic sill track for a window unit. 225,218, 11–28–72, Cl. D13—6.
Dallaire, Dominique and R. M., to P.H. Plastics Inc. Extruded plastic frame covering for a window unit. 225,219, 11–28–72, Cl. D13—6.
Dallaire, Raymond M.: *See—*
  Dallaire, Dominique and R. M. 225,218.
  Dallaire, Dominique and R. M. 225,219.
Dansk Designs Ltd.: *See—*
  Quistgaard, Jens H. 225,253.
Dart Industries Inc.: *See—*
  Ashton, Harold P., and Swett. 225,286.
Davis, Otho, to Cameron Athletic Corp. Shoe sole. 225,189, 11–28–72, Cl. D2—319.
De Jong, Hamilton C.: *See—*
  Brewer, William R. 225,226.
De Mandiargues, Alain P., to Parfums Guy Laroche. Bottle. 225,212, 11–28–72, Cl. D9—169.
Deuchler, Robert: *See—*
  Zampetti, Patrick, and Deuchler. 225,269.
Diamond International Corp.: *See—*
  Reifers, Richard F., and Bixler. 225,213.
  Reifers, Richard F., and Bixler. 225,214.
Disston, Inc.: *See—*
  Partasevich, William E., Jr. 225,202.
  Edgell, James E. 225,203.
Dowsett, James D. Sign. 225,288, 11–28–72, Cl. D96—12.
Edgell, James E., to Disston, Inc. Upright cordless electric grass shear. 225,203, 11–28–72, Cl. D8—8.
Ehrich, Hans O. G.: *See—*
  Ahlstrom, Tom E. T. 225,198.
Einstein, Alfred C., N. C. Wolff, Jr., and H. D. Moran, to Affiliated Hospital Products, Inc. Pool game board. 225,240, 11–28–72, Cl. D34—5.

Electronic Associates, Inc.: *See—*
  Arnold, Floyd L., Brude, Celli, and Patmore. 225,232.
Feuer, Perry, to Creative Creations, Inc. Illuminable novelty pin. 225,258, 11–28–72, Cl. D45—19.
Firma Drabert Sohne: *See—*
  Lange, Gerd. 225,195.
Foresight Products, Inc.: *See—*
  Heckathorn, Michael V. 225,285.
Francis, John P. Removable window case structure. 225,215, 11–28–72, Cl. D13—1.
GAF Corp.: *See—*
  Matwey, Paul. 225,279.
GTE Automatic Electric Laboratories, Inc.: *See—*
  Janda, George M. 225,233.
Garrity, Paul G.: *See—*
  Bacevius, Joseph G. 225,263.
General Electric Co.: *See—*
  Cook, William J. 225,229.
  Culbertson, Richard. 225,276.
General Foam Plastics Corp.: *See—*
  Chase, Ascher. 225,243.
Gilmour Mfg. Co.: *See—*
  Gilmour, Robert A. 225,222.
Gilmour, Robert A. to Gilmour Mfg. Co., a Division of R. M. Smith, Inc. Hose nozzle. 225,222, 11–28–72, Cl. D23—34.
Ginat, Jonathan. Table. 225,199, 11–28–72, Cl. D6—146.
Grigsby, Gilbert R., to Lubrastart International. Fluid dispensing unit for priming engines or the like. 225,282, 11–28–72, Cl. D77—1.
Heckathorn, Michael V., to Foresight Products, Inc. Mirror. 225,285, 11–28–72, Cl. D86—10.
Heggen, Larry D. Vehicle door handle shield. 225,206, 11–28–72, Cl. D8—137.
Heye, Hermann: *See—*
  Becker, Kurt. 225,210.
Holubinka, Siegmund B. Rug cleaning attachment for vacuum cleaner. 225,265, 11–28–72, Cl. D49—18.
Houplain, Herve. Floodlight. 225,261, 11–28–72, Cl. D48—20.
Houplain, Herve. Floodlight. 225,262, 11–28–72, Cl. D48—20.
Hoyt, Edwin D., to Rama Industrial Heater Co. Electric resistance heater. 225,228, 11–28–72, Cl. D23—77.
Hughes, James D. Marble runway novelty device. 225,247, 11–28–72, Cl. D34—15.
International Business Machines Corp.: *See—*
  Aderman, Wayne L., and Kneale. 225,234.
Iskyan, Mary K. Overshoe. 225,188, 11–28–72, Cl. D2—279.
Janda, George M., to GTE Automatic Electric Laboratories, Inc. Telephone operator's service console. 225,233, 11–28–72, Cl. D26—5.
Jeno's Inc.: *See—*
  Meaney, Daniel J., Jr. 225,254.
Keeler Brass Co.: *See—*
  Watt, William D., Jr. 225,207.
Kendrick, Marron, to Schlage Lock Co. Thumb turn for a lock. 225,204, 11–28–72, Cl. D8—108.
King, James A., Sr., to J. A. King & Co. Sample cutter. 225,273, 11–28–72, Cl. D55—1.
King, J. A., & Co.: *See—*
  King, James A., Sr. 225,273.
King, Roger A., and K. O. Burton, to Bur Kin Homes Corp. Modular home. 225,216, 11–28–72, Cl. D13—1.
Kneale, Collan B.: *See—*
  Aderman, Wayne L., and Kneale. 225,234.
Kretschmer, H. John, to Modumatic Industries, Inc. Dental operatory unit. 225,230, 11–28–72, Cl. D24—1.
Lange, Gerd, to Firma Drabert Sohne. Chair. 225,195, 11–28–72, Cl. D6—66.
La Telephonie Industrielle et Commercials "Telic": *See—*
  Lepoix, Louis L. 225,237.
Laurel Line Products: *See—*
  Axelrod, Barry. 225,283.
Leigh, Eloise M. Cover for a bed head board or similar article. 225,277, 11–28–72, Cl. D6—198.
Lepoix, Louis L., to La Telephonie Industrielle et Commercials "Telic." Intercommunications set. 225,237, 11–28–72, Cl. D26—14.
Lockwood, Earl E. Chair. 225,197, 11–28–72, Cl. D6—71.
Lubrastart International: *See—*
  Grigsby, Gilbert R. 225,282.
Lu Van Inc.: *See—*
  Van Syoc, Auburn G. 225,190.
Martel, Richard A., to Owens-Illinois, Inc. Segmented numeric display panel. 225,235, 11–28–72, Cl. D26—5.
Matwey, Paul, to GAF Corp. Electrostatic copying machine. 225,279, 11–28–72, Cl. D61—1.
McMahon, Rebecca M., to Syracuse China Corp. Dinner plate or similar article. 225,255, 11–28–72, Cl. D44—15.
Meaney, Daniel J., Jr., to Jeno's Inc. Pizza tray. 225,254, 11–28–72, Cl. D44—1.
Miller, Eugene B. Hand-held garden hoe. 225,205, 11–28–72, Cl. D8—12.
Miller, Terry G. Price tag holder. 225,208, 11–28–72, Cl. D8—244.
Miyahira, Chosuke. Table ornament. 225,238, 11–28–72, Cl. D29—23.
Modumatic Industries, Inc.: *See—*
  Kretschmer, H. John. 225,230.
Monocraft, Inc.: *See—*
  Chernow, Michael, and Yarkoni. 225,192.
Moran, Helmar D.: *See—*
  Einstein, Alfred C., Wolff, and Moran. 225,240.
Morris, Stephen W. Lamp. 225,260, 11–28–72, Cl. D48—20.
O'Brien, Gerard J. Audible training device or the like. 225,231, 11–28–72, Cl. D25—1.
Oneida Ltd.: *See—*
  Richmond, Colin B., II. 225,270.
  Richmond, Colin B., II. 225,271.
Ostrander, Robert K., to The Quaker Oats Co. Toy airplane. 225,248, 11–28–72, Cl. D34—15.
Ostrander, Robert K., to The Quaker Oats Co. Jack-in-the-box toy. 225,249, 11–28–72, Cl. D34—15.
Owens, Buck, to Chicago Musical Instrument Co. Guitar or similar article. 225,275, 11–28–72, Cl. D56—1.
Owens-Illinois, Inc.: *See—*
  Martel, Richard A. 225,235.
P.H. Plastics Inc.: *See—*
  Dallaire, Dominique and R. M. 225,218.
  Dallaire, Dominique and R. M. 225,219.
Papst, Georg F. Cassette tape recorder. 225,236, 11–28–72, Cl. D26—14.
Parfums Guy Laroche: *See—*
  De Mandiargues, Alain P. 225,212.
Peterson, Edward W., to Silverline, Inc. Boat upper shell. 225,281, 11–28–72, Cl. D71—1.
Peterson, Vernon A., to Tonka Corp. Toy vehicle cab. 225,251, 11–28–72, Cl. D34—15.
Poisson, Leandre A. Chair or similar article. 225,196, 11–28–72, Cl. D6—69.
Polaroid Corp.: *See—*
  Conner, James M. 225,280.
Poon, Yuen S., to Yuen Sang Hardware Co., Ltd. Link chain for a bracelet or similar article. 225,256, 11–28–72, Cl. D45—4.
Pruitt, Forrest W. Golf practice mat. 225,242, 11–28–72, Cl. D34—5.
Quaker Oats Co., The: *See—*
  Ostrander, Robert K. 225,248.
  Ostrander, Robert K. 225,249.
Quistgaard, Jens H., to Dansk Designs Ltd. Drinking glass or the like. 225,253, 11–28–72, Cl. D36—8.
Rama Industrial Heater Co.: *See—*
  Hoyt, Edwin D. 225,228.
Rams, Dieter, to Braun Aktiengesellschaft. Table lighter. 225,264, 11–28–72, Cl. D48—27.
Raynor, Terence R., and P. S. Smith, to AMP Inc. Screw. 225,209, 11–28–72, Cl. D8—267.
Reifers, Richard F., and K. D. Bixler, to Diamond International Corp. Molded packaging tray for meat or the like. 225,213, 11–28–72, Cl. D9—219.
Reifers, Richard F., and K. D. Bixler, to Diamond International Corp. Molded packaging tray for meat or the like. 225,214, 11–28–72, Cl. D9—219.
Reineman, Richard G., and G. E. Schaefer, to The Brunswick Corp. Hood for bowling ball subway return. 225,244, 11–28–72, Cl. D34—5.
Richmond, Colin B., II, to Oneida Ltd. Spoon or similar article. 225,270, 11–28–72, Cl. D54—12.
Richmond, Colin B., II, to Oneida Ltd. Spoon or similar article. 225,271, 11–28–72, Cl. D54—12.
Rizzuto, Leandro P., and M. Schrager, to Continental Hair Products, Inc. Handle for a styling comb. 225,284, 11–28–72, Cl. D86—8.
Roisman, Harper. Wrap dispenser. 225,267, 11–28–72, Cl. D52—2.
Rotheiser, Jordan I., to Selfix, Inc. Spray head. 225,223, 11–28–72, Cl. D23—35.
Russell, Lionel E. Bathtub. 225,225, 11–28–72, Cl. D23—55.
Russo, Andelfo J., to Cadillac Wire Corp. Display stand. 225,191, 11–28–72, Cl. D6—28.
Ruth, Douglas M. Bench. 225,194, 11–28–72, Cl. D6—60.
Sackler, Mortimer D., and M. R. Craig, to Synergistics. Packaging container or similar article. 225,211, 11–28–72, Cl. D9—163.
Schaefer, George E.: *See—*
  Reineman, Richard G., and Schaefer. 225,244.
Schlage Lock Co.: *See—*
  Kendrick, Marron. 225,204.
Schrager, Milton: *See—*
  Rizzuto, Leandro P., and Schrager. 225,284.
Selfix, Inc.: *See—*
  Rotheiser, Jordan I. 225,223.
Shabbarrasi, Anthony J. Keyboard for an electric organ or similar article. 225,274, 11–28–72, Cl. D56—1.
Sikorski, Helen K.: *See—*
  Sikorski, Thaddeus A. and H. K. 225,221.
Sikorski, Thaddeus A. and H. K. Automobile antenna identification device. 225,221, 11–28–72, Cl. D14—6.
Silverline, Inc.: *See—*
  Peterson, Edward W. 225,281.
Skuplen, Frank. Bracket lamp or similar article. 225,259, 11–28–72, Cl. D48—4.
Smith, Philip S.: *See—*
  Raynor, Terence R., and Smith. 225,209.
Sun, George C. Aerial toy. 225,250, 11–28–72, Cl. D34—15.
Swett, James B.: *See—*
  Ashton, Harold P., and Swett. 225,286.
Synergistics: *See—*
  Sackler, Mortimer D., and Craig. 225,211.
Syracuse China Corp.: *See—*
  McMahon, Rebecca M. 225,255.
TC Products: *See—*
  Court, Jules A. 225,227.
Tandberg, Eva. Weaving frame. 225,287, 11–28–72, Cl. D92—15.
Thrasher, Wilbert E. Dual plug cleaner. 225,257, 11–28–72, Cl. D49—11.
Tonka Corp.: *See—*
  Peterson, Vernon A. 225,251.
Vaco Products Co.: *See—*
  Wheeler, Roger W. 225,272.
Van Syoc, Auburn G., to Lu Van Inc. Convertible table. 225,190, 11–28–72, Cl. D6—3.
Vigan, Elaine G. Game device. 225,239, 11–28–72, Cl. D34—5.

Waite, Ralph D., to Ametek, Inc. Pressure gauge. 225,268, 11-28-72, Cl. D52—6.
Ware, R. Louis. Plant-growth apparatus. 225,252, 11-28-72, Cl. D35—3.
Watt, William D., Jr., to Keeler Brass Co. Simulated flush pull. 225,207, 11-28-72, Cl. D8—158.
Welsh Co.: *See*—
  Benjamin, E. Burton. 225,224.
Westlake, T. Walton. Three-dimensional game board. 225,241, 11-28-72, Cl. D34—5.
Wheeler, Roger W., to Vaco Products Co. Tool holder. 225,272, 11-28-72, Cl. D55—1.
Witton-James Ltd.: *See*—
  Baker, Noel J. 225,278.
Wolff, Norman C., Jr.: *See*—
  Einstein, Alfred C., Wolff, and Moran. 225,240.
Yacoboni, Joseph. House. 225,217, 11-28-72, Cl. D13—1.
Yarkoni, Fred E.: *See*—
  Chernow, Michael, and Yarkoni. 225,192.
Yuen Sang Hardware Co., Ltd.: *See*—
  Poon, Yuen S. 225,256.
Zampetti, Patrick, and R. Deuchler, to Construction Specialities, Inc. Grille. 225,269, 11-28-72, Cl. D54—2.

CLASSIFICATION OF PATENTS

ISSUED NOVEMBER 28, 1972

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	
16	3,703,728
237	3,703,729
272	3,703,730
CLASS 4	
110	3,703,731
131	3,703,732
185L	3,703,733
CLASS 5	
99R	3,703,734
147	3,703,735
CLASS 8	
42	3,704,086
66	3,704,087
CLASS 9	
9	3,703,736
CLASS 12	
130	3,703,896
CLASS 13	
27	3,704,336
CLASS 14	
71	3,703,737
CLASS 15	
229A	3,703,738
230.17	3,703,739
CLASS 16	
87.2	3,703,740
112	3,703,741
128	3,703,742
CLASS 17	
1A	3,703,743
11	3,703,744
45	3,703,745
71	3,703,746
CLASS 21	
2.5	3,704,088
2.7	3,704,090
54R	3,704,089
CLASS 23	
230R	3,704,096
	3,704,097
232R	3,704,098
253R	3,704,099
260	3,704,100
296	3,704,101
302	3,704,102
305	3,704,103
CLASS 24	
73HS	3,703,747
126	3,703,748
205.17	3,703,749
265R	3,703,750
CLASS 28	
1.4	3,703,751
4R	3,703,752
72.12	3,703,753
72.14	3,703,754
CLASS 29	
96	3,703,755
159.2	3,703,756
200P	3,703,757
202	3,703,758
417	3,703,759
433	3,703,760
436	3,703,761
464	3,703,762
503	3,703,763
CLASS 30	
32	3,703,764
41	3,703,765
346.53	3,703,766
CLASS 32	
57	3,703,767
CLASS 33	
79R	3,703,768
181AT	3,703,769
265	3,703,770
	3,703,771
CLASS 34	
9	3,703,772
159	3,703,773
CLASS 35	
9	3,704,337
35C	3,703,774
35E	3,704,338
CLASS 36	
2.5AG	3,703,775
CLASS 37	
9	3,703,776
CLASS 38	
77.83	3,703,777
CLASS 40	
32	3,703,778
135	3,703,779
CLASS 42	
1R	3,703,780
CLASS 43	
16	3,703,781
23	3,703,782
54.5A	3,703,783
CLASS 44	
51	3,704,105
58	3,704,107
59	3,704,106
62	3,704,108
66	3,704,109
CLASS 46	
40	3,703,785
129	3,703,784
CLASS 47	
56	3,703,786
CLASS 49	
169	3,703,787
307	3,703,788
CLASS 51	
9	3,703,789
CLASS 52	
98	3,703,790
107	3,703,791
242	3,703,792
403	3,703,793
506	3,703,794
521	3,703,795
CLASS 53	
180	3,703,796
CLASS 55	
62	3,703,797
67	3,703,798
147	3,703,799
238	3,703,800
385	3,703,801
CLASS 56	
13.3	3,703,802
30	Re.27,525
237	3,703,803
CLASS 58	
3	3,703,804
5R	3,703,805
CLASS 60	
19	3,703,806
39.18B	3,703,807
39.66	3,703,808
95	3,703,809
97S	3,703,810
CLASS 61	
1F	3,703,811
53	3,703,812
CLASS 62	
3	3,703,813
95	3,703,814
196	Re.27,522
290	3,703,815
457	3,703,816
CLASS 64	
13	3,703,817
CLASS 65	
32	3,704,110
CLASS 66	
84	3,703,818
93	3,703,819
177	3,703,820
CLASS 70	
38R	3,703,821
456B	3,703,822
CLASS 71	
92	3,704,111
93	3,704,112
CLASS 72	
406	3,703,823
CLASS 73	
61R	Re.27,526
65	3,703,824
116	3,703,825
121	3,703,826
139	3,703,827
179	3,703,828
290R	3,703,829
321	3,703,830
CLASS 74	
5	3,703,831
5.45	3,703,832
10	3,704,113
10.39	3,703,833
57	3,703,834
441	3,703,835
471R	3,703,836
519	3,703,837
575	3,703,838
600	3,703,839
CLASS 75	
.5AC	3,704,116
.5BC	3,704,115
.5C	3,704,117
3	3,704,114
170	3,704,118
CLASS 81	
9.5R	3,703,840
CLASS 83	
2	3,703,917
341	3,703,841
425.3	3,703,918
524	3,703,842
824	3,703,915
CLASS 84	
1.24	3,704,339
170	3,704,340
CLASS 85	
46	3,703,843
CLASS 89	
1.5D	3,703,844
134	3,703,845
CLASS 90	
11A	3,703,846
58C	3,703,847
CLASS 91	
265	3,703,848
412	3,703,849
446	3,703,850
CLASS 92	
33	3,703,851
92	3,703,853
258	3,703,852
CLASS 93	
1G	3,703,854
CLASS 94	
1.5	3,703,855
44	3,703,856
45R	3,703,857
CLASS 95	
12	3,703,858
90.5	3,703,859
93	3,703,860
CLASS 96	
1R	3,704,119
	3,704,120
	3,704,121
	3,704,124
1.6	3,704,123
1.8	3,704,122
14	3,704,125
29R	3,704,126
48	3,704,127
50	3,704,128
91R	3,704,129
114.7	3,704,130
CLASS 99	
	3,704,132
17	3,704,131
83	3,704,133
	3,704,134
108	3,704,135
116	3,704,136
140R	3,704,137
141A	3,704,138
192R	3,704,139
214	3,704,140
397	3,704,141
443	3,703,861
446	3,704,142
CLASS 100	
162B	3,703,862
CLASS 101	
183	3,703,863
369	3,703,864
CLASS 102	
56	3,703,865
70S	3,703,866
70.2R	3,703,867
103	3,703,868
CLASS 104	
23FS	3,703,869
CLASS 105	
366R	3,703,870
CLASS 106	
5	3,704,143
15FP	3,704,144
38.7	3,704,145
45	3,704,146
55	3,704,147
79	3,704,148
286	3,704,149
CLASS 108	
66	3,703,871
111	3,703,872
CLASS 112	
153	3,703,873
CLASS 114	
21R	3,703,874
230	3,703,875
235B	3,703,876
CLASS 115	
70	3,703,877
CLASS 116	
67	3,703,878
70	3,703,879
CLASS 117	
2TC	3,704,150
7	3,704,151
23	3,704,153
34	3,704,154
35.5	3,704,155
47A	3,704,156
68.5	3,704,157
76F	3,704,162
100B	3,704,158
123	3,704,159
138.8F	3,704,160
148	3,704,161
212	3,704,163
	3,704,164
	3,704,165
217	3,704,166
235	3,704,152
239	3,704,167
CLASS 118	
2	3,703,880
9	3,703,881
32	3,703,882
CLASS 119	
15.5	3,703,883
27	3,703,884
CLASS 123	
8.11	3,703,885
32ST	3,703,886
117R	3,703,887
119R	3,703,888
148E	3,703,889
CLASS 126	
85B	3,703,895
CLASS 127	
58	3,704,168
62	3,704,169
CLASS 128	
2H	3,703,892
2R	3,703,891
2W	3,703,890
2.08	3,703,893
77	3,703,894
156	3,703,897
261	3,703,898
347	3,703,899
419P	3,703,900
CLASS 131	
17R	3,703,901
22A	3,703,902
CLASS 133	
1	3,703,903
CLASS 134	
25A	3,704,170
144	3,703,905
CLASS 136	
86A	3,704,171
86C	3,704,172
135R	3,704,173
153	3,704,174
CLASS 137	
15	3,703,906
81.5	3,703,907
238	3,703,908
318	3,703,909
375	3,703,910
491	3,703,911
504	3,703,904
514	3,703,912
599	3,703,913
CLASS 139	
308	3,703,914
CLASS 145	
50R	3,703,916
CLASS 148	
1.5	3,704,177
	3,704,178
2	3,704,183
6.17	3,704,179
6.27	3,704,176
12	3,704,180
31.5	3,704,181
32	3,704,182
CLASS 149	
1	3,704,184
11	3,704,185
35	3,704,186
60	3,704,187
CLASS 156	
69	3,704,189
73	3,704,188
74	3,704,190
148	3,704,191
167	3,704,192
196	3,704,193
245	3,704,194
250	3,704,195
306	3,704,196
CLASS 159	
4A	3,703,919
CLASS 160	
107	3,703,920
CLASS 161	
67	3,704,197
148	3,704,198
157	3,704,199
262	3,704,200
CLASS 162	
19	3,704,201
CLASS 164	
57	3,703,922
130	3,703,921
260	3,703,923
337	3,703,924
CLASS 165	
151	3,703,925
CLASS 166	
106	3,703,926
272	3,703,927
275	3,703,928
302	3,703,929
CLASS 169	
2R	3,703,930
CLASS 171	
1	Re.27,528
CLASS 172	
4.5	3,703,931
288	3,703,932
CLASS 173	
12	3,703,933
43	3,703,934
CLASS 176	
68	3,704,202
CLASS 177	
124	3,703,935
CLASS 178	
5.2R	3,704,341
6.8	3,704,342
30	3,704,343
CLASS 179	
1SA	3,704,345
18BE	3,704,346
91R	3,704,347
100.2R	3,704,349
175.2C	3,704,348
CLASS 180	
5R	3,703,936
CLASS 181	
36R	3,703,937
58	3,703,938
CLASS 182	
107	3,703,939
CLASS 184	
55A	3,703,940
CLASS 188	
31	3,703,941
33	3,703,942
62	3,703,943
72.2	3,703,944
85	3,703,945
181R	3,703,946
290	3,703,947
CLASS 191	
12R	3,704,350
CLASS 192	
33R	3,703,948
CLASS 195	
1.3	3,704,203
100	3,704,204
103.5	Re.27,524
114	3,704,205
127	3,704,206
CLASS 197	
1R	3,703,949
6.1	3,703,950
CLASS 198	
20T	3,703,951
102	3,703,952
162	3,703,953
179	3,703,954
CLASS 200	
38R	3,704,351
85R	3,704,352
144R	3,704,354
153J	3,704,353
157	3,704,355
168C	3,704,356
CLASS 204	
9	3,704,175
15	3,704,207
	3,704,208
35N	3,704,209
	3,704,210
43	3,704,211
52R	3,704,213
158	3,704,214
163R	3,704,215
164	3,704,216
180G	3,704,217
180P	3,704,218
192	3,704,219
224	3,704,220
295	3,704,221

301	3,704,223
306	3,704,222
CLASS 206	
42	3,703,955
47R	3,703,956
CLASS 208	
131	3,704,224
CLASS 209	
144	3,703,957
CLASS 210	
65	3,703,958
87	3,703,959
121	3,703,960
151	3,703,961
321	3,703,962
386	3,703,963
CLASS 211	
184	3,703,964
CLASS 214	
6M	3,703,965
8	Re.27,523
9	3,703,966
17D	3,703,967
147T	3,703,968
152	3,703,969
302	3,703,971
519	3,703,972
778	3,703,973
CLASS 215	
9	3,703,974
	3,703,975
CLASS 219	
10.79	3,704,357
73	3,704,358
213	3,704,359
CLASS 220	
3	3,703,976
CLASS 221	
213	3,703,977
CLASS 222	
484	3,703,979
CLASS 223	
.89	3,703,978
CLASS 226	
90	3,703,980
CLASS 227	
136	3,703,981
CLASS 229	
28	3,703,982
CLASS 233	
19A	3,703,983
28	3,703,984
CLASS 235	
26	3,703,987
30R	3,703,985
60R	3,703,986
61.11R	3,704,360
92CP	3,704,361
151.13	3,704,362
153	3,704,363
176	3,704,364
CLASS 236	
15A	3,703,988
CLASS 238	
10E	3,703,989
CLASS 239	
2S	3,703,991
11	3,703,990
201	3,703,992
231	3,703,993
397	3,703,994
CLASS 240	
10R	3,704,365
10S	3,704,367
10T	3,704,366
51.12	3,704,212
128	3,704,368
CLASS 241	
69	3,703,995
241	3,703,970
CLASS 242	
68	3,703,996
182	3,703,997
CLASS 244	
13	3,703,998
CLASS 248	
20	3,703,999
42	3,704,000
221	3,704,001
CLASS 250	
65R	3,704,369
	3,704,370
83.6R	3,704,284
	3,704,371
202	3,704,372
	3,704,373
206	3,704,374
211J	3,704,375
	3,704,376
222R	3,704,378
CLASS 251	
149.6	3,704,002
312	3,704,003
CLASS 252	
8.9	3,704,225
54.6	3,704,277
62.51	3,704,278
62.56	3,704,226
95	3,704,227
117	3,704,228
182	3,704,229
	3,704,230
188.3	3,704,231
301.6S	3,704,232
309	3,704,263
316	3,704,264
353	3,704,262
501	3,704,265
520	3,704,266
524	3,704,267
546	3,704,320
CLASS 256	
1	3,704,004
22	3,704,005
CLASS 259	
4	3,704,006
122	3,704,007
CLASS 260	
2EP	3,704,268
2.5F	3,704,269
17.4GC	3,704,271
29.4R	3,704,273
29.6F	3,704,272
33.6AQ	3,704,274
37AL	3,704,275
41.5R	3,704,276
61	3,704,279
77.5AC	3,704,270
77.5AM	3,704,280
77.5NC	3,704,281
78A	3,704,282
79	3,704,283
87.5A	3,704,285
94.7R	3,704,286
94.9DA	3,704,287
112.5	3,704,288
210R	3,704,289
239.1	3,704,290
	3,704,291
	3,704,292
	3,704,294
239.5	3,704,295
240A	3,704,296
240C	3,704,293
243C	3,704,297
243R	3,704,298
247.1	3,704,299
250A	3,704,300
251R	3,704,301
256.4Q	3,704,302
256.5R	3,704,303
	3,704,304
268PA	3,704,306
268R	3,704,305
285.5	3,704,233
288	3,704,234
292	3,704,235
293.69	3,704,236
294 8B	3,704,237
296D	3,704,238
306.7	3,704,239
	3,704,240
310R	3,704,241
	3,704,242
326.5SF	3,704,243
326.9	3,704,244
327B	3,704,245
333	3,704,246
340.5	3,704,247
343.2F	3,704,248
	3,704,249
346.3	3,704,250
346.8	3,704,251
380	3,704,252
397.4	3,704,253
403.5	3,704,254
404.5	3,704,256
	3,704,257
404.8	3,704,255
410.9R	3,704,258
438.5R	3,704,259
448 2E	3,704,260
	3,704,261
453P	3,704,307
462R	3,704,308
479S	3,704,309
482C	3,704,310
486H	3,704,311
514R	3,704,312
520	3,704,313
	3,704,314
521R	3,704,315
527N	3,704,316
533R	3,704,317
534S	3,704,318
540	3,704,319
552R	3,704,321
558R	3,704,322
576	3,704,323
586	3,704,324
606.5P	3,704,325
609F	3,704,326
	3,704,327
618F	3,704,328
641	3,704,329
674A	3,704,330
675	3,704,331
679R	3,704,332
683R	3,704,333
683.43	3,704,334
CLASS 261	
25	3,704,008
91	3,704,009
CLASS 263	
21B	3,704,010
29	3,704,011
CLASS 266	
13	3,704,013
23K	3,704,012
CLASS 269	
249	3,704,014
CLASS 270	
52	3,704,015
CLASS 273	
1.5R	3,704,017
82R	3,704,016
134AB	3,704,018
CLASS 277	
27	3,704,019
62	3,704,020
180	3,704,021
CLASS 279	
121	3,704,022
CLASS 280	
11.13B	3,704,024
11.13L	3,704,023
41A	3,704,025
87B	3,704,027
87R	3,704,026
106T	3,704,028
124R	3,704,029
150AB	3,704,032
150C	3,704,031
150R	3,704,030
CLASS 285	
18	3,704,033
47	3,704,034
157	3,704,035
CLASS 292	
167	3,704,036
CLASS 293	
1	3,704,037
CLASS 294	
65	3,704,038
CLASS 296	
137B	3,704,039
CLASS 298	
17R	3,704,040
CLASS 302	
14	3,704,041
CLASS 303	
3	3,704,042
21BE	3,704,043
21F	3,704,044
	3,704,045
22	3,704,046
54	3,704,047
CLASS 307	
10LS	3,704,379
52	3,704,380
53	3,704,381
233	3,704,382
237	3,704,383
304	3,704,384
CLASS 308	
72	3,704,048
84	3,704,049
CLASS 310	
8.2	3,704,385
CLASS 312	
7R	3,704,050
184	3,704,051
CLASS 313	
108R	3,704,386
257	3,704,387
CLASS 315	
36	3,704,388
84.5	3,704,389
276	3,704,390
CLASS 316	
17	3,704,052
CLASS 317	
11C	3,704,391
23	3,704,392
80	3,704,393
101DH	3,704,394
120	3,704,395
124	3,704,396
157.6	3,704,397
235R	3,704,398
	3,704,399
CLASS 318	
6	3,704,400
7	3,704,401
166	3,704,402
227	3,704,403
290	3,704,404
467	3,704,405
648	3,704,406
	3,704.407
CLASS 321	
5	3,704,408
CLASS 324	
53	3,704,411
57R	3,704,409
58A	3,704,410
61R	3,704,412
67	3,704,413
79D	3,704,414
99R	3,704,415
121R	3,704,416
158F	3,704,418
163	3,704,417
CLASS 325	
308	3,704,419
329	3,704,420
408	3,704,421
422	3,704,422
458	3,704,423
470	3,704,424
CLASS 328	
145	3,704,425
CLASS 329	
122	3,704,426
CLASS 331	
94.5D	3,704,377
94.5	3,704,427
	3,704,428
101	3,704,429
113A	3,704,430
177R	3,704,431
183	3,704,432
CLASS 333	
72	3,704,433
75	3,704,434
CLASS 335	
255	3,704,435
CLASS 338	
202	3,704,436
CLASS 339	
21R	3,704,437
95D	3,704,438
99R	3,704,439
114	3,704,440
220T	3,704,441
CLASS 340	
1L	3,704,442
8R	3,704,443
15.5DP	3,704,444
62	3,704,445
74	3,704,446
172	3,704,447
172.5	3,704,448
	3,704,450
	3,704,451
	3,704,452
	3,704,453
173AM	3,704,456
173SP	3,704,454
	3,704,455
174PW	3,704,457
198	3,704,449
239F	3,704,458
258B	3,704,461
271	3,704,459
274	3,704,460
373	3,704,462
CLASS 343	
100LE	3,704,464
100R	3,704,463
102	3,704,465
719	3,704,466
CLASS 346	
1	3,704,467
40	3,704,344
74CR	3,704,468
CLASS 350	
17	3,704,053
123	3,704,054
128	3,704,055
150	3,704,056
160R	3,704,060
160	3,704,057
	3,704,058
	3,704,059
171	3,704,061
301	3,704,062
302	3,704,063
CLASS 352	
100	3,704,064
169	3,704,065
CLASS 355	
11	3,704,066
29	3,704,067
46	Re.27,527
	3,704,068
110	3,704,069
CLASS 356	
152	3,704,070
CLASS 401	
96	3,704,071
291	3,704,072
CLASS 408	
1	3,704,073
11	3,704,074
CLASS 415	
68	3,704,075
72	3,704,076
CLASS 416	
30R	3,704,077
CLASS 417	
369	3,704,078
438	3,704,079
486	3,704,080
CLASS 423	
128	3,704,091
242	3,704,095
299	3,704,093
342	3,704,104
350	3,704,094
465	3,704,092
CLASS 424	
249	3,704,335
CLASS 425	
4	3,704,081
46	3,704,082
71	3,704,083
404	3,704,084
CLASS 431	
264	3,704,085

D 2—	279	225,188
	319	225,189
D 6—	3	225,190
	28	225,191
		225,192
	48	225,193
	60	225,194
	66	225,195
	69	225,196
	71	225,197
	78	225,198
	146	225,199
	172	225,200
	186	225,201
	198	225,277
D 8—	8	225,202
		225,203
	12	225,205
	108	225,204
	137	225,206
	158	225,207
	244	225,208
	267	225,209
D 9—	99	225,210
	163	225,211
	169	225,212
	219	225,213
		225,214
D13—	1	225,215
		225,216
		225,217
	6	225,218
		225,219
D14—	3	225,220
	6	225,221
D23—	34	225,222
	35	225,223
	53	225,224
	55	225,225
	71	225,226
	77	225,227
		225,228
	123	225,229
D24—	1	225,230
D25—		225,231
		225,232
D26—	5	225,233
		225,234
		225,235
	14	225.236
		225,237
D29—	23	225,238
D34—	5	225,239
		225,240
		225,241
		225,242
		225,243
		225,244
		225,245
		225,246
	15	225,247
		225,248
		225,249
		225,250
		225,251
D35—	3	225,252
D36—	8	225,253
D44—	1	225,254
	15	225,255
D45—	4	225,256
	19	225,258
D48—	4	225,259
	20	225,260
		225,261
		225,262
	24	225,263
	27	225,264
D49—	11	225,257
	18	225,265
D52—	2	225,266
		225,267
	6	225,268
D54—	2	225,269
	12	225,270
		225,271
D55—	1	225,272
		225,273
D56—		225,274
		225,275
	2	225,276
D59—		225,278
D61—	1	225,279
		225,280
D71—		225,281
D77—		225,282
D80—	8	225,283
D86—		225,284
	10	225,285
D89—	1	225,286
D92—	15	225,287
D96—	12	225,288

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

Patents

1 : 3,704,165
2 : 3,703,929
4 : 3,704,039
3,704,091
3,704,190
3,704,440
5 3,704,030
3,704,344
6 . 3,703,735
3,703,740
3,703,788
3,703,799
3,703,816
3,703,858
3,703,883
3,703,884
3,703,905
3,703,908
3,703,913
3,703,955
3,703,959
3,703,962
3,703,964
3,703,968
3,703,990
3,703,993
3,703,998
3,703,999
3,704,008
3,704,014
3,704,019
3,704,025
3,704,034
3,704,036
3,704,041
3,704,047
3,704,054
3,704,058
3,704,059
3,704,060
3,704,065
3,704,074
3,704,084
3,704,090
3,704,137
3,704,139
3,704,148
3,704,174
3,704,211
3,704,217
3,704,236

3,704,258
3,704,284
3,704,338
3,704,343
3,704,346
3,704,347
3,704,363
3,704,366
3,704,367
3,704,412
3,704,419
3,704,420
3,704,426
3,704,436
3,704,439
3,704,443
3,704,448
3,704,454
3,704,455
3,704,463
8 : 3,703,766
3,703,997
3,704,011
3,704,098
3,704,173
3,704,385
3,704,452
9 : 3,703,804
3,703,822
3,703,898
3,703,919
3,703,981
3,704,057
3,704,061
3,704,068
3,704,096
3,704,097
3,704,144
3,704,172
3,704,184
3,704,227
3,704,231
3,704,264
3,704,327
3,704,375
3,704,461
10 : Re.27,524
3,703,751
3,704,127
3,704,157
3,704,188

3,704,225
3,704,259
12 : 3,703,734
3,703,762
3,703,765
3,703,794
3,703,953
3,703,992
3,704,352
3,704,423
3,704,429
3,704,438
13 : 3,704,001
3,704,004
3,704,449
16 : 3,703,965
3,704,111
17 : Re.27,528
3,703,730
3,703,747
3,703,791
3,703,833
3,703,843
3,703,844
3,703,846
3,703,875
3,703,879
3,703,897
3,703,907
3,703,921
3,703,931
3,703,935
3,703,952
3,703,982
3,704,018
3,704,075
3,704,077
3,704,153
3,704,155
3,704,180
3,704,195
3,704,204
3,704,221
3,704,251
3,704,256
3,704,306
3,704,308
3,704,320
3,704,321
3,704,353
3,704,373

3,704,383
3,704,389
3,704,424
18 : 3,703,741
3,703,795
3,703,802
3,703,854
3,703,925
3,704,043
3,704,206
3,704,208
3,704,248
3,704,351
3,704,364
3,704,382
3,704,396
3,704,397
3,704,422
19 : Re.27,525
3,703,810
3,704,170
3,704,203
20 : 3,703,782
3,703,932
3,704,446
21 : 3,703,758
3,703,853
22 : 3,703,748
3,703,763
3,703,781
3,704,113
3,704,117
3,704,193
3,704,257
23 : 3,703,864
24 : 3,703,750
3,704,073
3,704,125
3,704,445
3,704,453
25 : 3,703,739
3,703,759
3,703,764
3,703,809
3,703,842
3,703,874
3,703,892
3,703,896
3,703,991
3,703,994
3,704,006

3,704,069
3,704,080
3,704,093
3,704,126
3,704,141
3,704,164
3,704,179
3,704,182
3,704,337
3,704,342
3,704,360
3,704,376
3,704,377
3,704,394
3,704,433
3,704,462
3,704,464
26 3,703,745
3,703,755
3,703,785
3,703,786
3,703,801
3,703,806
3,703,825
3,703,829
3,703,876
3,703,895
3,703,944
3,703,948
3,703,958
3,703,995
3,704,016
3,704,026
3,704,031
3,704,042
3,704,062
3,704,105
3,704,187
3,704,200
3,704,276
3,704,289
3,704,328
3,704,369
3,704,408
3,704,417
27 : 3,703,866
3,703,930
3,703,937
3,703,957
3,703,996
3,704,023

3,704,311
28 : 3,703,783
29 : Re.27,522
Re.27,527
3,703,777
3,704,135
3,704,277
30 : 3,703,894
31 : 3,703,728
3,703,771
33 : 3,704,070
34 : Re.27,523
3,703,731
3,703,770
3,703,772
3,703,778
3,703,811
3,703,831
3,703,834
3,703,868
3,703,978
3,704,015
3,704,046
3,704,106
3,704,108
3,704,112
3,704,134
3,704,169
3,704,185
3,704,186
3,704,192
3,704,196
3,704,197
3,704,212
3,704,219
3,704,234
3,704,249
3,704,263
3,704,267
3,704,268
3,704,274
3,704,282
3,704,287
3,704,298
3,704,300
3,704,309
3,704,323
3,704,324
3,704,325
3,704,326
3,704,330

3,704,345
3,704,362
3,704,393
3,704,410
3,704,414
3,704,425
3,704,430
3,704,447
3,704,458
35 : 3,703,891
3,703,942
3,703,947
3,704,067
36 : 3,703,760
3,703,826
3,703,835
3,703,855
3,703,873
3,703,882
3,703,920
3,703,946
3,703,949
3,703,961
3,704,003
3,704,035
3,704,037
3,704,056
3,704,066
3,704,072
3,704,094
3,704,107
3,704,109
3,704,114
3,704,124
3,704,133
3,704,143
3,704,150
3,704,159

3,704,166
3,704,171
3,704,191
3,704,255
3,704,260
3,704,261
3,704,278
3,704,293
3,704,295
3,704,381
3,704,384
3,704,387
3,704,390
3,704,416
3,704,431
3,704,432
3,704,460
3,704,465
37 : 3,703,746
3,703,753
3,703,773
3,703,901
3,703,939
3,704,160
39 : 3,703,738
3,703,743
3,703,808
3,703,813
3,703,814
3,703,856
3,703,857
3,703,870
3,703,878
3,703,880
3,703,881
3,703,903
3,703,910

3,703,924
3,703,934
3,703,950
3,703,969
3,703,975
3,704,005
3,704,013
3,704,045
3,704,052
3,704,078
3,704,082
3,704,102
3,704,110
3,704,132
3,704,136
3,704,156
3,704,178
3,704,183
3,704,189
3,704,194
3,704,199
3,704,224
3,704,246
3,704,336
3,704,361
3,704,368
3,704,370
3,704,395
3,704,405
3,704,409
3,704,428
3,704,459
3,704,467
40 : 3,703,776
3,703,812

3,703,827
3,703,928
3,703,956
3,703,976
3,704,319
3,704,333
3,704,334
41 : 3,703,900
3,703,915
3,703,980
42 : 3,703,737
3,703,848
3,703,899
3,703,923
3,703,977
3,703,979
3,703,988
3,704,007
3,704,017
3,704,028
3,704,049
3,704,081
3,704,083
3,704,118
3,704,138
3,704,145
3,704,149
3,704,175
3,704,207
3,704,220
3,704,232
3,704,239
3,704,240
3,704,242
3,704,243
3,704,253
3,704,262

3,704,290
3,704,291
3,704,292
3,704,297
3,704,303
3,704,304
3,704,312
3,704,313
3,704,314
3,704,380
3,704,386
3,704,391
3,704,392
3,704,435
3,704,441
44 : 3,703,872
3,703,983
45 : 3,704,413
47 : 3,704,053
48 : 3,703,744
3,703,784
3,703,803
3,703,807
3,703,828
3,703,832
3,703,836
3,703,850
3,703,886
3,703,893
3,703,904
3,703,906
3,703,926
3,703,927
3,703,966
3,703,984
3,704,033
3,704,040

3,704,063
3,704,104
3,704,198
3,704,216
3,704,270
3,704,374
3,704,401
3,704,403
3,704,406
3,704,407
3,704,444
3,704,450
3,704,451
49 : 3,703,732
3,704,000
3,704,365
51 : 3,703,757
3,703,865
3,703,890
3,704,100
3,704,142
3,704,285
3,704,421
3,704,434
53 : 3,703,769
3,703,960
3,704,092
3,704,348
3,704,442
54 : 3,703,820
3,704,272
3,704,273
55 : 3,703,815
3,703,841
3,703,938
3,703,954
3,703,972
3,703,974
3,704,237
3,704,269
3,704,271
3,704,288
3,704,299

Design Patents

6 : 225,200
225,201
225,204
225,220
225,226
225,227
225,228
225,239
225,244
225,260
225,267
225,275
225,282
225,283

225,285
9 : 225,197
225,213
225,214
225,229
225,263
12 : 225,194
225,257
13 : 225,277
17 : 225,205
225,223
225,224
225,233
225,242

225,248
225,249
225,252
225,259
225,265
225,281
18 : 225,216
19 : 225,206
25 : 225,215
26 : 225,190
225,193
225,207
225,234
225,251

225,254
225,272
225,288
33 : 225,196
34 : 225,221
225,231
225,232
225,250
225,269
36 : 225,188
225,191
225,192
225,199
225,211

225,230
225,238
225,246
225,255
225,258
225,266
225,270
225,271
225,274
225,276
225,279
225,280
225,284
37 : 225,189

225,273
39 : 225,235
40 : 225,225
42 : 225,202
225,203
225,217
225,222
225,240
225,268
44 : 225,286
48 : 225,208
225,247
51 : 225,243

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